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ON THE
FUTURE OF HOSPITALS.[1]

BY H. J. WARING, M.S.LOND., F.R.C.S.ENG.,
SURGEON TO ST. BARTHOLOMEW'S HOSPITAL, LONDON, ETC.

DURING recent months there has been much discussion concerning the positions of medical men and of hospitals with regard to the allocation and utilisation of money contributed by patients towards maintenance, or by public, municipal, or Government authorities on their behalf, for both maintenance and treatment. These discussions and dissertations mainly appear to have centred around the "rights" of the medical man, whilst the "rights" of the patient and of the hospital have been left out of the main discussion. The fairly general adoption of the practice of soliciting and obtaining from patients in charity hospitals contributions towards, or the entire cost of, their maintenance, has greatly changed the relative positions of patients, hospitals, and the medical profession. I propose to discuss the future of our hospitals—both public and private—and to make some suggestions in this connexion, paying particular attention to the rights of medical men and patients.

Before doing this, however, I must make certain premises and assumptions: 1. The so-called voluntary hospital system is well established and will continue to exist in this country; rich and poor, each in their own way, will continue to provide funds for the maintenance of hospitals, to which the necessitous poor will at all times be admissible. 2. The medical profession will continue to act as a profession, and will not become a trade; the latter course would include the establishment of a trade union, which would dominate the profession and tend to retard progress.

Since the founding of most of our voluntary hospitals, the benefits of these institutions as regards investigation and treatment have been limited to the necessitous poor, whilst the doors have been closed to those who have provided, or contributed towards, the funds either for their establishment or maintenance. Thus the necessitous poor have been much better provided for than the upper and middle classes, and public hospitals have been far better built and equipped than private hospitals. The general public have during recent years become cognisant of this fact, and I have observed during the past decade a gradually increasing demand on the part of the non-necessitous for means or facilities of entrance as patients to the voluntary hospitals. The laity have begun to recognise that the investigation, diagnosis, and treatment of disease with expedition, and the likelihood of obtaining the best result can only be satisfactorily carried out in a properly built, equipped, and staffed institution, clinic, or hospital, and that, for the most part, our so-called private hospitals and nursing homes are merely adapted second-class private dwellings.

In the past the well-to-do classes of England have been quite satisfied, and have even preferred to go into small nursing homes or so-called private hospitals because they thought they would get in such places what they looked upon as "home comforts," and also because of a prejudice against public hospitals which has survived since the pre-aseptic days. Now, however, that the scientific principles of cleanliness are better understood, and the internal conditions of hospitals known, people are beginning to realise that their prejudices against public medical institutions are unfounded, and that they are more likely to get better investigation and treatment in a hospital or public medical institution than elsewhere. This change of opinion has been expedited and assisted by the increasing number of English people who live in tenement mansions, flats, or apartment houses.

[1] Being the Annual Oration delivered before the Medical Society of London, 1922.

HOSPITAL CLASSIFICATION OF THE POPULATION.

When considering the population as a whole, and their requirements as regards hospitals or medical institutions, they may be conveniently divided or grouped in the following five classes: 1. The necessitous poor who, from their pecuniary condition, are unable to pay or contribute anything for hospital accommodation, maintenance, or treatment. 2. The necessitous poor who can make a small contribution towards hospital accommodation and maintenance, and nothing for medical treatment. 3. The necessitous but not always poor, who can pay the cost of hospital accommodation and maintenance, but nothing for medical treatment. 4. The middle classes, who can pay for ordinary hospital accommodation and maintenance, and moderate fees for treatment. 5. The rich and upper classes who can pay for better-class hospital accommodation and maintenance and ordinary fees for treatment.

It is now generally admitted that the medical treatment of patients in hospitals should be of the same high level or standard for all, rich or poor, and that in the past it has been difficult or often impossible for the opulent, and especially the middle classes, to obtain that standard of prompt attention and treatment which is open to the necessitous poor. In view of changing conditions, and of the present trend of public opinion, hospitals ought to be adapted to modern needs and requirements. At present the first three of the classes mentioned are already provided for in our general hospitals, but no equally satisfactory accommodation is available for the others, for whom it is necessary to provide additional accommodation. The buildings of most public hospitals are not suitable for provision of first-class accommodation of this kind by reconstruction; moreover, in most instances the funds utilised in the building of these hospitals have been either given or legated for distinctly charitable purposes. Our hospitals, as regards building arrangements and beds, are for the necessitous poor; they do not contain accommodation for the suffering rich. On the other hand, in many hospitals the special departments, such as those of pathology, electro-therapeutics, mechano-therapeutics, X ray and actino-therapeutics, are provided with accommodation and equipment sufficient for all charitable purposes, and also for patients in a paying part of the hospital.

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The equipment of a general hospital for the extra functions which I have mentioned can, in my opinion, only be satisfactorily carried out by building a new department or hospital block in the grounds of the charitable hospital or on land immediately adjacent, and in direct connexion with the parent institution.

I have had prepared plans of such an addition to a charitable hospital or public medical institution which, in my opinion, would provide hospital requirements for all classes of the community. I assume that the first three classes of patients mentioned are provided for in the general hospital; the accommodation proposed is for patients in categories 4 and 5. I suggested that the "paying block" should be in close connexion with the parent institution, because the staffs of the special departments are often perfectly willing, and have plenty of room and personnel, to carry on the investigations appertaining to a paying patients' department.

Figs. 1–4 illustrate plans of such an addition to a charity hospital for the benefit of those classes of the community not already provided for—i.e., the middle-class patient who can pay for hospital maintenance, accommodation, and moderate fees for treatment, and the rich or opulent patient who can pay for extra accommodation and ordinary fees for treatment.

An illustration of the elevation of the buildings is not given; these plans are intended to show accommodation only. They have been worked out by Mr. H. E. Mathews, architect to St. Bartholomew's Hospital, and myself.

Fig. 1 shows the ground floor of such an addition to a charitable hospital. The entrance from the street is placed centrally, and passes into a corridor communicating with the general hospital. A large corridor runs from one end to the other. On this floor are consultation rooms, a small clinical laboratory, and X ray and electrical rooms. The latter are not intended to provide facilities for every pathological, electrical, or X ray investigation, the great majority of which would be carried out in the general hospital building. There are also patients' recreation rooms (billiard room, smoking room, &c.), an observation room for the reception of new patients, a convalescents' dining room, and offices for matron, steward, and clerks, together with medical staff rooms.

Fig. 2 illustrates a typical medical or surgical floor. The building may have one or several floors of this kind, each containing a series of patients' rooms, with bath and lavatory. These patients' rooms may be, if desired, at different prices according to their size. If an opulent patient wishes to have a set of rooms, two or more can be set apart for him. For middle-class patients who are not quite equal to these arrangements, a room containing four beds and one with two beds are provided. A floor of this kind provides accommodation for 26 patients. On each floor is a clinical laboratory for any necessary investigations, and also the serving kitchen for distribution of food, together with the usual rooms for the nurses. This plan can be adapted for one, two, or three floors, according to the town in which the hospital is situated and the height to which building is permitted.

Fig. 3 shows the next floor, devoted to gynæcology and maternity. There is a great lack in this country of hospital accommodation for upper-class maternity cases. This plan provides accommodation for seven patients, one room having two beds. A labour theatre, a waiting room, and a lavatory containing a bath for each baby are also provided. On the other side is accommodation for gynæcological patients, with clinical laboratory, kitchen, and nurses' room.

Fig. 4 shows the next floor, containing the general operation rooms; there are two theatres, and between them properly equipped sterilisation and instrument rooms, and a room for anæsthetising patients, &c. There is a bed-lift for patients, a surgeons' room, and a nurses' room. As it is desirable to have people always on duty at the theatre, residential rooms for sister and nurse are provided on this floor. The cook, the nurses' main dining room, &c., are also located on this level. Accommodation for either nurses or maids is not suggested in this plan; I think that, as a general hospital principle, they should not be located in out-of-the-way parts of the building, close to the sick poor. There has been too great a tendency in the past to make anywhere do for nurses and maids; in my opinion they should not live or sleep in the main block; they should have their own living rooms.

In drawing up those plans I have had in mind provision of accommodation for, approximately, 100 patients. One fact is noticeable in these plans in order to bring things, as it were, right up to date—no fireplaces are provided. At the present time, in view of the expense of running a building on coal heating and the usual methods of ventilation, the architect said—and I think he is right—that is not necessary; it can be done otherwise. A special sanitary tower is not provided. According to the King's Fund each one of these sanitary towers must have ventilation on each side. Sanitary towers are of the past, and not really necessary.

I have not taken into consideration how many beds ought to go to an acre, or how many beds can be got on to such and such an area. That, according to modern ideas, is not so limited as in the recent past when the idea was 50 beds per acre. This idea began in the days of the Crimean War, and for more than 70 years we have adhered to it.

ADVANTAGES OF A PAYING PATIENT'S DEPARTMENT.

The advantages which would be gained by the provision of such a department for paying patients in a general charitable hospital would be as follows:—

To Patients.—Members of the upper and middle classes could readily obtain institutional investigation and treatment of the same high standard as that which they provide or assist in providing for the necessitous poor.

To Hospitals.—1. The special departments, both for investigation and treatment, of many hospitals could be more fully and continuously utilised than at the present time, especially in hospitals where such departments are only open on two or three days or half-days per week. Departments of pathology, X rays, electro-therapeutics, and mechano-therapeutics are examples of this nature. 2. The overhead charges for general administration would not of necessity be increased, or in any case would not be proportionately increased; a portion of such charges could legitimately be transferred to the paying department, which could thus be made a source of profit to the hospital. The sums thus derived could then be utilised for the general upkeep of the charity department. As an illustration, I can quote a hospital I have recently inspected, where a separate department containing accommodation for 100 paying patients was built and equipped by a generous donor—who, I was informed, had originally been a paying patient of the older hospital. This new block for paying patients was managed by the general administration of the hospital, and a profit of about £10,000 per annum was made from the payments by patients; this sum was used for the general charity portion of the hospital.

To Hospital Staffs.—Members of hospital staffs would be able to have some of their own patients in the private or paying department, and thus save themselves considerable time in going from one private hospital or nursing home to another.

To Staff and Patients.—Resident medical officers could be appointed to a paying department of this kind, whose services would be available for patients in the absence of the patient's own medical men.

The advantages provided by the establishment of a paying department of the kind mentioned would, I think, be most appreciated in connexion with maternity and surgery. There is a lamentable lack of satisfactory accommodation for maternity patients in this country; I am informed that at present the mortality in connexion with maternity is little different from that which obtained in the pre-aseptic days. This is a very serious reflection on our methods. Governmental and departmental measures appear to be much to blame for our very limited and inferior accommodation in this respect; our Government seems to be much more interested in, and devotes more time and money to the consideration of, the survival and preservation of the unfit, than that of the fit; in other words, the 10 per cent. of the population which represents the unfit receive almost everything, and the 90 per cent. of potentially fit practically nothing. A short time ago I had occasion to inspect a public mental hospital recently built and equipped at the public expense; as regards arrangement and equipment, I do not think any public hospital for medical, surgical, or obstetrical patients in this country can favourably compare with this particular hospital.

DEFICIENCIES OF PUBLIC HOSPITALS.

I will now briefly notice some of the deficiencies of many public hospitals, and at the same time try to make suggestions for their improvement.

Maternity Accommodation.—Most of our charity general hospitals, and especially those which have medical schools attached, are lamentably deficient in accommodation for maternity patients. The fact that medical students are still expected to learn practical obstetrics by attending women in their confinements at their homes, helps, I think, to perpetuate what ought to be an obsolete system. If our Ministry of Health would recognise this fact and provide properly equipped maternity homes with well-trained personnel, they would confer on the community at large a much greater benefit than by continually appointing special departments to investigate or deal with one particular disease. This multiplication of special Government departments for individual diseases renders public administration in medical matters difficult, and creates a special type of doctor who in many respects is very unsatisfactory from a general point of view. This criticism applies especially to the personnel of some of the school clinics in connexion with the treatment of adenoids and enlarged tonsils.

Too Liberal Dispensation of Medicines or Drugs.—Many hospitals err, I think, in this direction. The British public, and more especially those members of

PLANS OF SUGGESTED ADDITIONS TO A CHARITY HOSPITAL, FOR PATIENTS ABLE TO PAY MODERATE FEES.

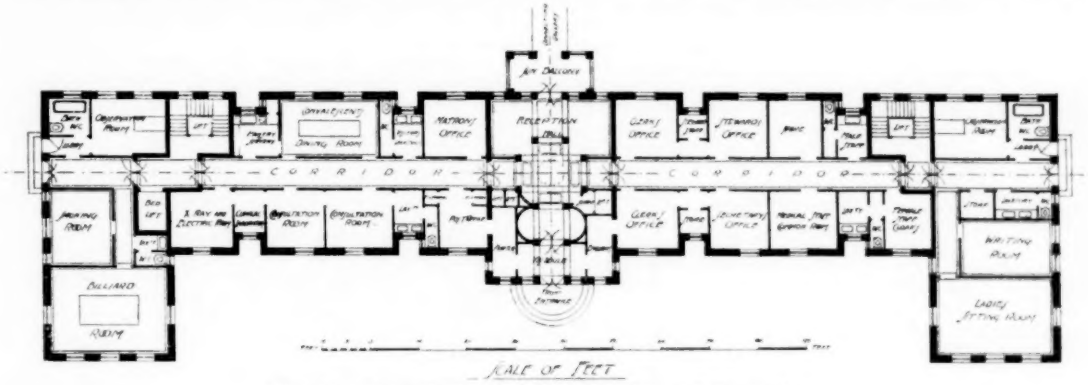

FIG. 1.—*Ground Floor: Administration and Recreation.*

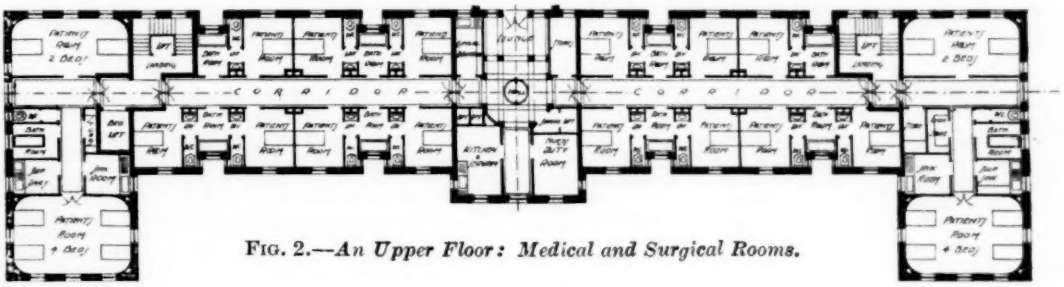

FIG. 2.—*An Upper Floor: Medical and Surgical Rooms.*

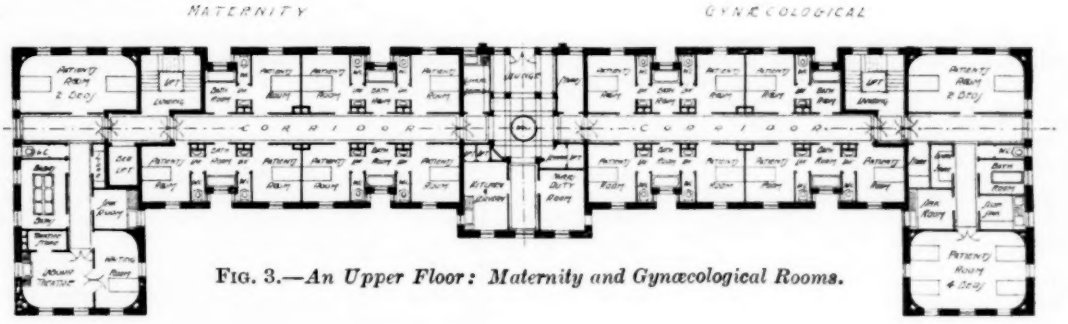

FIG. 3.—*An Upper Floor: Maternity and Gynæcological Rooms.*

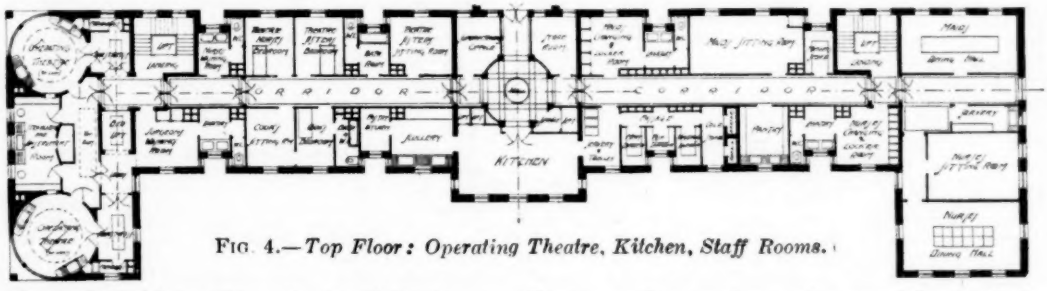

FIG. 4.—*Top Floor: Operating Theatre, Kitchen, Staff Rooms.*

it who seek assistance from the hospitals, have a fixed idea that all diseases can be cured by drinking something from a bottle or taking some other form of medicine. They are not satisfied unless a medicine is prescribed, and the doctor is far too prone to treat a patient on palliative lines by giving medicine than by insisting, if possible, on removal of the causes of disease—such as carious and suppurating teeth in a large number of cases of so-called indigestion—or by advising a suitable diet or change of air or residence, if these measures are possible in the circumstances. As an illustration of this, I recently saw a patient who had been a regular attendant at a hospital for seven years on account of abdominal discomfort in connexion

with food. On examination, her teeth were found to be dirty, and many of them carious; this condition was attended to, and now the patient no longer requires the repeated doses of gentian, rhubarb, and sodium carbonate to which she had become accustomed.

Accommodation for Dental Patients.—The dental departments of our general hospitals are often defective, owing to the small amount of space allotted to them and to the common practice of sending patients to special dental hospitals for treatment. Such patients do not usually return to the general hospital; consequently the benefits derived from good dental treatment are not appreciated by the staff of the general hospital or by students at those hospitals which have medical schools. If the dental departments of our general hospitals were brought up to the level of many other special departments, much good would result.

Adaptation and Repair of Buildings.—There is a widespread belief, not limited to the laity, that any comparatively decent building of suitable size can be converted into a satisfactory hospital. Consequently there is a marked tendency to adapt buildings in this manner, almost always with unsatisfactory results. Sanitation, drainage, ventilation, economical heating and general working, and proper facilities for ingress and egress are usually poor in an adapted building. As a result, the expenses of upkeep, administration, and working are usually unnecessarily heavy in an adapted or patched-up and obsolete hospital building.

Hospital buildings are, or ought to be, temporary affairs; and I think if the King's Fund, or the College of Physicians, or the College of Surgeons, or the two latter combined, were to create a small consultative body consisting of people who really knew what was requisite for a modern hospital—people who would advise upon hospital buildings and improvements, which the King's Fund will pay for—I think, perhaps, much more good would be done than is done at the present time. I have visited for the King's Fund for many years, and have tried to make honest and legitimate recommendations—almost invariably without result.

Another point—it is only a small one—a common fault, in both London and provincial hospitals, is insufficient provision of small rooms, in connexion with clinical units, for what may be called the seriously ill, the moribund, and the dying. Provision of such rooms constitutes an enormous advantage to medical, surgical, and nursing staffs.

Wherever possible, hospital buildings should be specially built for the purpose; and when they have become antiquated and ill-suited for that purpose they should be scrapped and new, well-designed buildings put up in their places. Economy will in the long run be much facilitated in this manner. Many of our hospital buildings in London, on account of age and original bad design, are ill-suited for their present purposes. I am not sure that the methods of the administrative body of King Edward's Hospital Fund are not in many cases responsible for this. I have inspected a large number of the hospitals in London which receive grants from the Fund, and have found that recommendations by the visitors on lines of this kind have usually had no effect.

Small Clinical Laboratories in Connexion with Large Hospital Wards or Units.—It is essential, in my opinion, that large clinical wards, or sets of adjacent wards forming a clinical unit, should have in immediate proximity to them a clinical laboratory where ordinary clinical pathological investigations can be carried out. If such provision is not made the clinician is handicapped, and the patient is liable not to receive the clinical pathological investigation essential for the proper comprehension and treatment of his disease. Most of our large hospitals have realised the importance of such clinical pathological accommodation, but in small hospitals and cottage hospitals it often does not exist.

Hospital Equipment.—The next matter I want to say a few words about is what may be called the standardisation of hospital equipment. There is a great tendency in all hospitals, especially charitable hospitals, for every medical man to think he is in a position to order whatever equipment he requires for his own particular fads. That is not a good thing for a hospital; it means unnecessary expense and resultant duplication of equipment. The only people who really gain from it are the equipment manufacturers and the instrument makers. Whilst visiting hospitals I have noticed this: the smaller the hospital, the larger the staff in proportion, and the more varied the individual equipment; every man has his own ideas in regard to his own pet operation, and he asks for separate tools. The result is a lack of standardisation of what is necessary. The same may be said of sterilisation in connexion with operation theatres. Instrument makers make large sums because some ill-guided surgeon insisted that certain instruments are requisite for the work, when some simple standard instrument could well be used at half the cost.

Accommodation for Nursing Staff.—As before stated, the nursing staff of a hospital ought to be housed in a separate building or in a localised and detached portion of a hospital building, and not in adapted attics or upper portions of a hospital block. Many of our hospitals are very deficient in this respect.

Administration and Selection of Administrators.—The administration of many of our public hospitals is often unsatisfactory, because of the multifarious duties which the administrator is often expected to perform, and because he has had no previous training before appointment as hospital secretary or superintendent. The work of director of a hospital should, I think, almost always be separated from that of head of the appeal department. The two functions are quite distinct, and qualities requisite for one are not often to be found combined with those requisite for the other. In some hospitals a medical man has been appointed as director or superintendent; for general administration and upkeep of all parts of the hospital he is not often successful, except when he has had a special training for the purpose. The best hospital administrators are those who have been brought up in a well-managed large institution, and have had personal experience of working in the different parts.

PRIVATE HOSPITALS.

For a private patient to obtain all the benefits of scientific investigation and treatment such as are provided in a good hospital, it is necessary for him to be under the care of one medical man and to go to, or to be attended by, several others at different places. A complicated medical case may require investigation by the pathologist, bacteriologist, X ray practitioner, and surgeon, all at different places—a very expensive proceeding, beyond the reach of many. This condition of affairs is largely due to the practical non-existence of well-equipped private clinics or hospitals, and to the fact that nearly all our private hospitals and nursing homes are adapted private dwellings, with practically no reconstruction and with no provision for scientific investigation.

Figs. 5–8 illustrate what I consider to be a reasonable building for the reception of rich and opulent patients and middle-class patients, apart from a charity hospital. In this particular plan it is assumed that the hospital is in London and that therefore ground space is comparatively valuable. The accommodation provided is as follows:—

Fig. 5.—On the ground floor are a waiting room; a surgical consulting room available for surgeons, ophthalmologists, rhinologists, otologists, &c.; a physician's consulting room, available for different branches of medicine, maternity, and gynæcology; between the consulting rooms a small clinical laboratory, which can be used by all the staff, and a dark room; also the matron's administrative office, the department of mechano-therapeutics, a general laboratory for pathological investigations, and a dental room.

Fig. 6.—The next floor provides rooms for different classes of patients, medical or surgical, as the case may be. The accommodation consists of a ward for four patients, a ward for two, and several single rooms, with a room for nurses opposite the central lift.

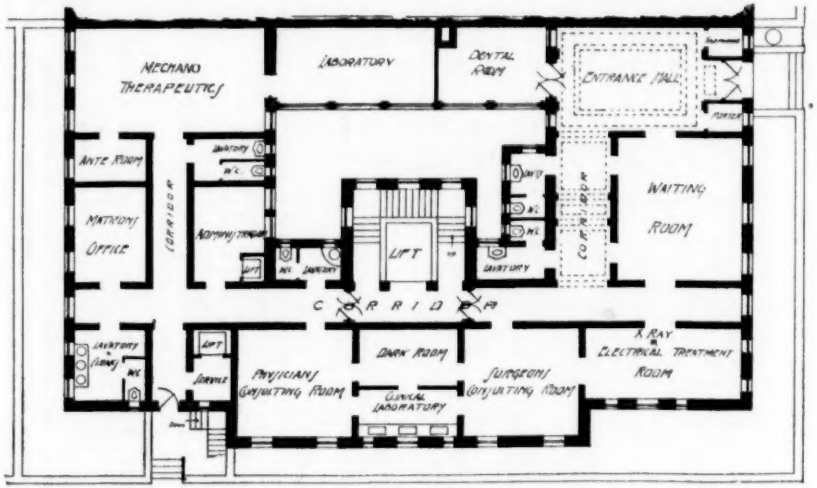

FIG. 5.—*Ground Floor: Consulting Rooms, &c.*

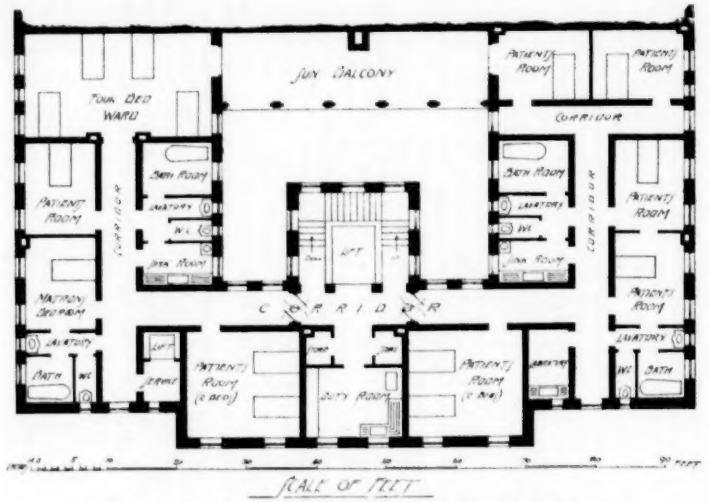

FIG. 6.—*An Upper Floor: Medical or Surgical Rooms.*

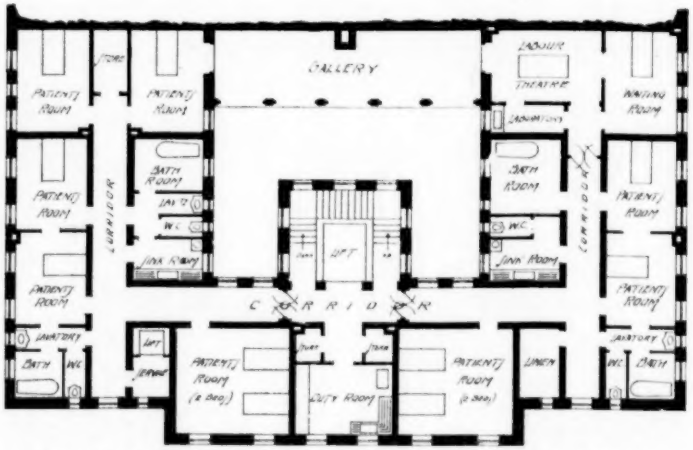

FIG. 7.—*An Upper Floor: Maternity and Gynæcological Rooms.*

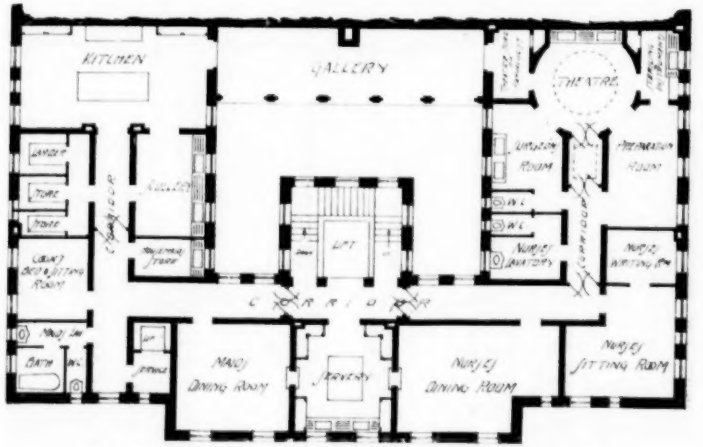

FIG. 8.—*Top Floor: Operating Theatre, Kitchens, &c.*

Fig. 7 shows the next floor, designed to accommodate gynæcological and maternity patients. For gynæcological patients there are separate rooms and two-bedded rooms. For the maternity portion there is a labour theatre, waiting room, and separate one-bedded rooms.

Fig. 8 shows the top floor, containing an operating theatre, preparation rooms, nurses' dining room, kitchen, and scullery, &c. The basement of the building contains an electro-cardiac room and the rooms connected with the domestic working of the house. A mortuary and refuse destructor are provided away from the main building.

It has always seemed strange to me in connexion with English people that they are quite prepared, when they have money and wish to take a holiday, to hire two or three rooms in an hotel of the best kind they can afford. But if it so happens that they are ill and require serious medical or surgical attention, they are quite prepared to go into what is little better than a third- or fourth-class lodging-house in a back street where the necessary surgical or medical advice and treatment are carried out.

A Lecture

ON THE

FIBROUS DIATHESIS

AND THE MALIGNANCY OF FIBROUS TISSUE.

Delivered at Manchester Royal Infirmary

BY ERNEST S. REYNOLDS, D.L., M.D., F.R.C.P. LOND.,

EMERITUS PROFESSOR OF CLINICAL MEDICINE IN THE UNIVERSITY OF MANCHESTER; CONSULTING PHYSICIAN TO THE MANCHESTER ROYAL INFIRMARY.

FROM time to time we see old vaccination scars or the scars of old burns raised up into a mass, instead of being, as usual, contracted and depressed. This is, of course, the "keloid" first described by Alibert in 1810 and sometimes called cheloma or cancroide. Why does this not occur in all patients? I wish to propose the following hypothesis: There is a fibrous diathesis or an inherent constitutional state in which the individual affected is predisposed to an unusual development of fibrous tissue at the site of a previous irritation. Adami and McCrae[1] classify the fibroses as follows:—

1. *Fibroses of Inflammatory Origin.*—(1) Replacement fibroses in which the fibrous tissue takes the place of other tissue destroyed, such as the "scleroses" of the nervous system and the fibrosis of nephritis and hepatitis; (2) proliferative fibroses, as those of the granulomata and keloid; (3) post-fibrinous, which replace fibrin in a thrombosed blood-vessel or on a serous surface (adhesions).

2. *Fibroses of Non-Inflammatory Origin.*—(1) Due to strain, as in the fibrosis of the intima of blood-vessels; (2) neoplastic or fibrous tumours.

As a rule fibrosis is part of a healing process and is naturally beneficial, but in those with the fibrous diathesis it overreaches itself, so to speak, and by its excess is harmful and often becomes so malignant (without, of course, causing secondary growths) as ultimately to cause death. A consideration from this point of view of each of the divisions of the above classification will clearly show this, and it is of interest to see how the various organs of the body may be affected.

As regards the skin, excessive fibrosis after burns or superficial injuries may cause distortions either disfiguring or harmful, as when a joint is fixed, or the eyelid pulled away from the eye or the lips from the gums: or nerves may be involved in the excessive fibrosis with the occurrence of constant pain, as in "painful stumps." I once saw a case of sciatica where the quite unnecessary operation of nerve stretching had been performed; the wound became septic and finally a deep keloid cicatrix involving the whole sciatic nerve occurred with lamentable effects. Dupuytren's contraction is an excessive fibrosis, often produced by constant irritation of the palm. The chronic varicose ulcer with its cartilaginous-like edge so difficult to heal is another instance of excessive fibrosis. Differences in the amount of fibrosis in synovial membranes and surrounding tissue account for the different extent of deformity and fixation seen in rheumatoid arthritis.

[1] Text-book of Pathology, p. 140.

LUNGS AND PLEURÆ.

In the lungs and pleuræ most interesting examples of excessive fibrosis may be found. In certain patients after pleuro-pneumonia resolution does not take place; instead, there is a progressive development of fibrous tissue which by its contraction greatly diminishes the chest cavity on the same side, and at the same time destroys the lung tissue, leading finally to chronic bronchiectasis and death, the so-called "Corrigan's phthisis." After continuous inhalation of certain irritative dusty particles, such as emery, silica, or even flour, a mechanical bronchitis occurs, leading in some cases to an extensive fibrosis of both lungs, ultimately fatal. It is likely that cases of chronic pulmonary tuberculosis going on for many years owe their chronicity to an excessive development of fibrous tissue, this being one of the rare instances of such an excess being possibly of benefit. Another very chronic and ultimately fatal fibrous excess occurs in chronic indurative mediastinitis with its characteristic signs.

OTHER CONDITIONS.

In the circulatory system the results of excessive fibrosis are most important. I would suggest that this tendency explains the difference in the final result after attacks of endocarditis in different persons, that where the valves become greatly malformed it is due to an excessive fibrosis, a "keloid" of the valves; and similarly totally adherent pericardium after a pericarditis may occur. In the arteries a constant strain will set up an arterio-sclerosis in some men (of fibrous diathesis) and not in others.

The chronic round ulcer of the stomach or duodenum, with rigid edges which will not heal and which is so similar to the chronic varicose ulcer of the leg, is a further example of this condition. Sometimes we meet with cases of marked granular kidney, with the classical symptoms, in young adults: on inquiry this can be traced back to a scarlatinal nephritis in which the whole kidney tissue has been affected. As a rule this subsides, but if the fibrous diathesis is present excessive and progressive fibrosis occurs with an ultimately fatal result. The same thing happens in some cases of lead poisoning in young adults. Is it possible to include chronic enlargement of the prostate as a sample of the fibrous diathesis, and can we thus explain why excessive stricture of the urethra occurs after gonorrhœa in some and not in others?

In the nervous system may be found many instances of excessive fibrosis often associated with similar changes in the blood-vessels. Chronic cerebral arterio-sclerosis occurs in some men who have had excessive mental work and stress, yet not in others who may have had much greater stress. It is likely that various scleroses of the spinal cord, syphilitic or otherwise, may occur more frequently in those with a fibrous diathesis; and thus may be explained the great differences of progress in various types of disseminated sclerosis. After herpes zoster one sometimes sees neuralgia of great intensity lasting in an area for many months, possibly due to extensive fibrosis after the inflammation of the affected nerve ganglion.

And in this way the great difference in progress of cases of cancer may be accounted for. Some may spread and grow rapidly, others be of great hardness with much fibrosis and very slow growth, differences seen so commonly in cancer of the breast: another instance of excessive fibrosis lengthening life.

But as I have shown above, excessive fibrosis is very frequently of fatal tendency and therefore of great importance in prognosis.

RAPID DIGITALIS EFFECTS BY ORAL ADMINISTRATION.

BY FRANCIS R. FRASER, M.D., F.R.C.P. EDIN.,
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PROFESSOR OF MEDICINE, UNIVERSITY OF LONDON.

To obtain a maximum beneficial effect with a powerfully toxic drug such as digitalis it is necessary to administer it with caution. This is particularly the case when individual cases differ greatly in the ease with which toxic phenomena develop. With digitalis heart-block will develop after smaller doses when a lesion is present damaging the auriculo-ventricular conducting apparatus, and other derangements of rhythm, such as ventricular extrasystoles, are more easily produced in hearts in which the myocardium is severely intoxicated or degenerated. It is not always easy to recognise clinically whether or not a given case will develop deleterious derangements of rhythm or other toxic phenomena more easily than a normal person would; therefore it is difficult to estimate to what extent the appearance of toxic phenomena will limit the administration and the maximum beneficial effect obtainable in a given case.

Usual Method of Administration.

For this reason the administration is usually effected by repeated doses, each dose representing a small fraction of the total administered, before the maximum effect is obtained. Digitalis requires at least six hours for complete absorption after oral administration, and is destroyed or eliminated very slowly,[1] so that if repeated doses are given at about six-hourly intervals the administration may be stopped at the first sign of intoxication, when there is little of the drug to be further absorbed and no chance of severe toxic effects developing. In this way the maximum beneficial effect is obtained some days as a rule after the administration is commenced.

Eggleston's Method.

The amount required to produce the maximum beneficial effect is, even in the most suitable cases, very close to the amount required to produce the first signs of intoxication, and a few years ago Eggleston[2] showed, in animals and in man, that the total amount required to produce the first signs of intoxication was directly proportional to the body-weight, and that, if the preparation employed was standardised in "cat-units," it is possible to calculate by a simple formula the amount required in any given case to produce the first signs of intoxication. From this work it appeared that it should be possible to obtain safely the maximum effect possible in a few hours by giving at once the total amount calculated, or a little less than the total. To avoid the discomfort and possibly the gastric irritation that might result from such a large dose, and principally to allow of a margin of safety in case of unusual susceptibility, Eggleston recommended that the total be divided into three doses to be given at intervals of six hours. White and Morris,[3] Robinson,[4] and others have reported on the results obtained by this method. Eggleston's formula for calculating the dose of powdered leaves is

$$\frac{\text{cat-unit value} \times 0{\cdot}15 \times \text{body-weight (lb.)}}{1000} = \text{grammes of powdered leaves,}$$

and for the tincture

$$\frac{\text{cat-units} \times 0{\cdot}15 \times \text{body-weight}}{100} = \text{c.cm. of tincture,}$$

and he recommends that the total be divided and administered in the following way: (1) ½ to ⅔ of the total, (2) ⅓ to ¼ of the total, (3) ⅙ to ⅛ of the total at intervals of six hours.

If this method of dosage is to be used with safety the cases must obviously be those in which there is no serious interference with auriculo-ventricular conduction or other contra-indication to a full digitalis effect, and it is clear that such a method is of value only when the symptoms are so urgent that immediate relief is necessary. Cases of auricular fibrillation with rapid ventricular rates and urgent symptoms are peculiarly suitable, and seldom present contra-indications to a full digitalis effect.

Preparations of digitalis supplied by firms of good repute are always standardised, but not as a rule in this country, in terms of cat-units. A good preparation may be taken as having a cat-unit value of 100 mg., and if this approximation is used, and if, as is frequently the case, the body-weight cannot be ascertained accurately because of the patient's condition and the presence of œdema, it is advisable to take the total amount to be administered as 75 per cent. of the figure obtained by Eggleston's formulæ.

Technique Employed.

The majority of the patients in whom this method has been utilised by the staff of the Medical Unit at St. Bartholomew's Hospital have had a body-weight of about 8 st. or 112 lb., so that the calculated amount of a good tincture would be 17 c.cm., or rather over 4 drachms. Seventy-five per cent. of this, or 3 drachms, we have divided into three doses of 1½ drachms, 1 drachm, and ½ drachm, given at intervals of six hours. To satisfy ourselves as to the effect of this method we have only commenced the administration of the drug after the patients had had several days of complete rest in bed, since many apparently urgent cases recover to a large extent with complete rest and good nursing, but to use the method to the best advantage in therapeutics the administration should be commenced when the symptoms are most urgent.

Results.

We have used this method of massive digitalis administration 14 times in 10 cases, and the results are tabulated below.

Case No.	Age.	Sex.	Rhythm.	Diagnosis.	Total dose in drm. of tinct. in 12 hrs.	Fall in rate of ventricle.	Time in hrs. after first dose.	
							Definite effect.	Maximum effect.
1	39	F.	A.F.	Mit. sten., rheum.	1½	130–88	5	13
2	27	F.	N.	,,	3	100–86	48	72
			A.F.	,,	3	88–60	7	15
3	58	F.	,,	Myoc., art.-scl.	3	160–88	7	24
			,,	,,	3	100–80	24	24
4	45	F.	,,	Mit. sten.	3	140–48	11	18
			,,	,,	2½	142–64	7	24
5	39	M.	,,	Syph. aortitis	3	108–72	17	29
6	51	F.	,,	Mit. sten., cereb. thromb.	3	148–76	9	29
			,,	,,	3	130–84	13	20
7	41	F.	N.	Mit. sten., rheum.	3	90–80	30	30
8	36	M.	A.F.	Mit. sten., rheum., pul. thromb.	3	120–100	20	20
9	50	M.	N.*	Myoc., pulm. thromb.	3	120–80	24	36
10	44	F.	A.F.	Mit. sten., rheum.	3	112–80	5	24

A.F. = Auricular fibrillation. N. = Normal.
* Bundle branch lesion.
Mit. sten., rheum. = Mitral stenosis, rheumatic. Myoc., art.-scl. = Myocarditis, arterio-sclerosis. Cereb. thromb. = Cerebral thrombosis.

In the three cases with normal rhythm it would appear that little was gained by this method of administration. If the digitalis effect was produced more rapidly than would be the case by the more usual methods, the time gained was not so striking as to justify the risk of over-dosage, and it is seldom that the symptoms are so urgent in this type of case. In Case 2, although the slowing of the pulse did not appear for 48 hours, the diuresis was pronounced in the first 24 hours, and there was a marked improvement in the patient's subjective condition within 24 hours, but the symptoms were not so urgent as to require such a rapid effect. Two months later this patient was readmitted with severe heart failure and

auricular fibrillation, and on this occasion a more useful effect was produced, which is illustrated in Chart 2. In Case 9 the symptoms were very urgent, as the patient had pulmonary thrombosis, and although a marked slowing of the pulse-rate was effected it was transient, and not accompanied by improvement in the general condition.

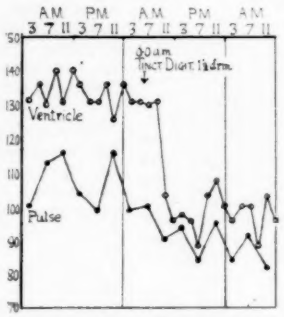
In the other cases auricular fibrillation was present, and except on two occasions—in Case 8, and on the second occasion in Case 3—the result was prompt and dramatic, immediate relief resulting with lessening of the dyspnœa and onset of diuresis, and the patient usually enjoyed a restful sleep with 12 hours of the commencement of the therapy. Case 8 had pulmonary thrombosis and died the following day. The symptoms were not relieved in spite of the slowing of the ventricular rate, which was not maintained. On the occasion of the second administration in Case 3 the symptoms were not so urgent and the rate was not so high, so that a dramatic effect was not to be expected. Case 6 was of considerable interest, in that the patient was in hospital because of the condition of hemiplegia, and while in hospital developed auricular fibrillation. As the ventricular rate was increasing and severe heart failure developing, the administration of digitalis was commenced. When the maximum slowing was obtained the rhythm returned to normal. Four weeks later auricular fibrillation again occurred, and also a reversion to normal rhythm when the maximum digitalis effect was produced.

Illustrative Cases.

Chart 1 illustrates the effect of a single dose of 1½ drachms of the tincture in a patient with severe heart failure, who had six days' complete rest in the ward before the therapy was commenced. The patient was a female, aged 39 years, with mitral stenosis and auricular fibrillation, extreme cyanosis, pulmonary congestion, enlarged liver, ascites, and œdema. The first symptoms of circulatory failure were noticed 12 months before admission, and there was an indefinite history of rheumatic infections. The ventricular rate at the time when the dose was given was 132 to the minute and the radial pulse-rate was 100. The dose was given at 6 A.M., and by 11 A.M. the ventricular rate was 104 and the pulse-rate 90, with a striking improvement in the dyspnœa and general comfort of the patient.

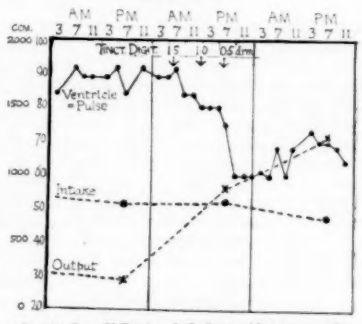
Chart 2 illustrates the effect of 3 drachms in three divided doses at intervals of six hours in a girl, aged 27 years, with mitral stenosis and auricular fibrillation. With rest alone the heart-rate fell from 130 to 88, and there was no pulse deficit. The patient was still cyanosed and dyspnœic, and had considerable œdema: 1½ drachms were given at 6 A.M., 1 drachm at 12 noon, and ½ drachm at 6 P.M. A definite effect was seen in seven hours, and the maximum effect in 15 hours, when the heart-rate had fallen to 60. A marked diuresis also occurred, commencing in the 24-hour period (7 A.M. to 7 A.M.) in which the drug was administered and continuing for the ten days following.

CHART 1.



CASE 1.—Effect of single dose of 1½ drm. tincture of digitalis.

CHART 2.

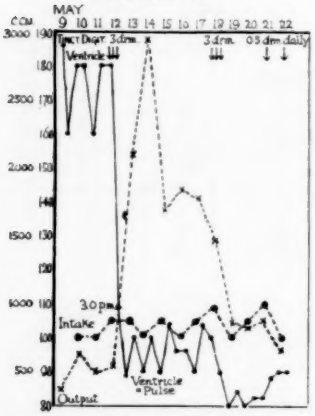


CASE 2.—Effect of 3 drm. tincture of digitalis in three divided doses at intervals of six hours.

Chart 3 illustrates the effect in a female patient, aged 58, who had auricular fibrillation but no evidence of valvular disease. On the fourth day after admission the rate counted by auscultation at the apex was 180, and no pulsation was palpable in the radial artery. Seven hours after the first dose a definite drop in the rate was noted to 144, and in nine hours it was 108. In 24 hours the maximum effect on the rate was obtained, and the heart-rate and pulse-rate were identical at 88. A pronounced diuresis occurred in the 24 hours following. A further 3 drachms were given six days later with a less striking result, and the development of numerous extrasystoles indicated that the maximum beneficial effect had been obtained. The rate was then maintained by 30 minims a day in three doses of 10 minims.

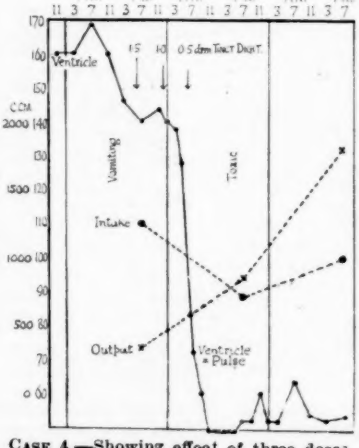
Chart 4 illustrates a similar result in a female, aged 45, with mitral stenosis and auricular fibrillation, who was nauseated and vomiting on admission. The first dose was vomited, but after a preliminary administration of 10 minims of tincture of opium the digitalis was retained. Great relief was obtained and all nausea disappeared until the afternoon of the day following, when there was a return for a few hours of nausea and depression, due almost certainly to an excess of digitalis, since the heart-rate at this time dropped to 46. In this case the third dose of ½ drachm could with advantage have been omitted. This is the only instance in which any discomfort due to an excess of digitalis was seen, and it was slight and of brief duration.

CHART 3.



CASE 3.—Effect of two administrations each of 3 drm. tincture of digitalis, separated by a six days' interval.

CHART 4.


AM PM AM PM AM PM
11 3 7 11 3 7 11 3 7 11 3 7 11 3 7 11 3 7 11
Ventricle
1.5 1.0 0.5 drm Tinct Digit.
Vomiting
Toxic
Intake
Output
Ventricle = Pulse

CASE 4.—Showing effect of three doses of tincture of digitalis in the one case where discomfort was caused by excess of the drug.

Discussion.

Similar results can be obtained in less time by the intravenous injection of strophanthin, but to obtain a maximum beneficial effect it is necessary to give doses close to a dangerously toxic dose. When the oral administration is used the onset of severe toxic phenomena will usually result in vomiting that prevents the absorption of further amounts of the drug, but when the intravenous administration is employed no such rejection is possible and the margin of safety is greatly reduced. If smaller doses of strophanthin are used the full effect will be obtained no earlier than by the rapid oral method. There are undoubtedly cases in which, because of gastric disturbances or delirium, the drug cannot be given by the mouth, and then strophanthin by intravenous administration is of great value; but rapid effects

comparable to those obtained by the help of Eggleston's formulæ cannot be produced except at a grave risk.

We have used in most of this series a total quantity of 3 drachms of the tincture in three doses, and it is probable that by approximating more closely to the amount calculated from Eggleston's formulæ even better and quicker response may be obtained; but these cases have been sufficient to convince us that the principle of rapid digitalisation along the lines suggested by Eggleston is one of great value in suitable cases.

Summary.

Digitalis was administered by the "rapid method" on 14 occasions, using doses of 1½ drachms, 1 drachm, and ½ a drachm of the tincture at intervals of six hours. In cases of auricular fibrillation with rapid ventricular rates prompt slowing and clinical improvement resulted. A definite effect could be seen in from 5 to 12 hours, and the maximum effect was obtained in 15 to 30 hours.

Cases with normal rhythm are not suitable for this method of administration. The method is of great value in cases of auricular fibrillation with rapid ventricular rates and urgent symptoms.

References.—1. Eggleston: American Journal of Medical Sciences, 1920, clx., 625. 2. Eggleston: Archives of Internal Medicine, 1916, xvi., 1. 3. White and Morris: Archives of Internal Medicine, 1918, xxi., 740. 4. Robinson: American Journal of Medical Sciences, 1920, clix., 121.

OPHTHALMIC PROGRESS IN EGYPT.[1]

BY A. F. MACCALLAN, C.B.E., F.R.C.S. ENG.,
DIRECTOR OF THE EGYPTIAN GOVERNMENT OPHTHALMIC HOSPITALS.

THE last occasion on which I had the honour of addressing the Ophthalmic Section of the British Medical Association on ophthalmic progress in Egypt was at the Aberdeen meeting in 1914. I had then been engaged for ten years in the post-graduate teaching of ophthalmology and in ophthalmic organisation, so that when war broke out the routine work of the hospitals was maintained in spite of reduction of British personnel. Among the more important war work carried out by the ophthalmic staff may be mentioned the organisation in January, 1915, of two clearing hospitals for Turkish wounded during the attack on the Suez Canal, a hospital for 150 Senegalese troops at Zagazig, and in May, 1915, a general hospital (650 beds) under canvas at Alexandria (removed to Giza in 1916). This general hospital was referred to officially by the Director of Medical Services, Egypt Command, as "the model of what a war hospital under canvas should be."

One result of the war has been to take away from my staff all British inspecting surgeons. Their work was invaluable during the period of organisation; their places have now been taken by Egyptian senior medical officers who have studied under me for many years, and who carry out their duties with keenness and intelligence. The Egyptian system has some claim to distinction in the fact that 20 special ophthalmic hospitals are grouped together under one direction. This not only enables a large amount of clinical work to be done, but also facilitates the systematic trial of various methods of operation and of treatment.

The system was inaugurated in 1903, when the late Sir Ernest Cassel created a Trust Fund of £41,000 for the purpose of teaching ophthalmology to qualified Egyptian medical men. In that year I was one of the senior clinical assistants at the Royal London Ophthalmic Hospital, having previously been house surgeon there for three years, and I had the good fortune to be invited to organise and direct the movement. We started with one travelling hospital in tents and one Egyptian medical officer, at a place 100 miles distant from any sort of civilisation. A few years later, on my recommendation, the Egyptian Government took over the organisation and undertook to maintain permanent hospitals in each of the 14 provinces, if we were able to raise a sufficient sum to build and equip each hospital from local sources. We have succeeded in raising a sum of about £100,000 since then, and have built, or are building, a permanent hospital for each province. There is one exception—

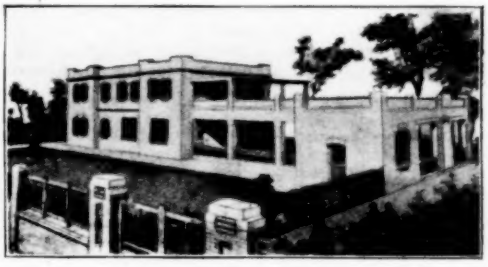
FIG. 1.

Cassel Fund travelling ophthalmic hospital, founded 1905, and now permanently attached to Assouan Province.

the province of Assouan, where one of the original travelling hospitals has been allocated to the long and narrow stretch of country which intervenes between Assouan town in the south and Luxor in the north.

Besides the permanent hospitals in the capital of each province, several of the provincial or county councils are maintaining hospitals under my direction. A small central laboratory for clinical investigations in temporary premises in the vicinity of Cairo is about to be replaced by an adequate building adjacent to the new hospital at Giza. This, being within a quarter of an hour's drive of the centre of Cairo, will be very convenient both for teaching and research. The money for this has been given by the Imperial

FIG. 2.



Qena ophthalmic hospital, to be opened in November, 1922.

War Graves Commission. Besides the actual hospital work, which is carried on daily except on Fridays, from 8 A.M. until 1 P.M., inspection and treatment by the ophthalmic staff in the Government Primary Schools has been in force since 1908.

I have said enough to show that in Egypt we have succeeded in organising a useful system of special hospitals and a very live school of ophthalmology.

[1] A paper read in the Section of Ophthalmology of the annual meeting of the British Medical Association.

THE LATE DR. ARTHUR RANSOME.—The Committee of the Manchester and Salford Sanitary Association has passed a resolution putting on record its regret at the death of Dr. Arthur Ransome, F.R.S., who for 40 years was an active member of the Association, and during a large part of this period was its honorary secretary and afterwards chairman. The records of the Association and his numerous public lectures, more especially on tuberculosis, bear testimony to the great work he did in educating the public of Manchester and district, and in causing Manchester to be recognised as a leading municipality in advancing the cause of public health.

TRACHOMA IN PALESTINE.

BY I. TICHO, M.D.,
CHIEF OF THE OPHTHALMOLOGICAL DEPARTMENT OF THE ROTHSCHILD HOSPITAL OF THE A.Z.M.U.,
AND
I. J. KLIGLER,
DIRECTOR OF THE LABORATORY, ROTHSCHILD HOSPITAL.

PART I., by Dr. I. TICHO.

THE incidence of trachoma in Palestine is not definitely known. The available statistics do not cover the rural population; they deal with comparatively small numbers, or have as their basis only patients seen in the clinic. According to the Government report the incidence is about 80–95 per cent., but these figures are not based on systematic studies of the entire population. The best available data on the incidence of trachoma is that obtained from an examination of the school children, and the results may be taken as an index for the rest of the population. Even this measure cannot serve for the rural Arab population, because until now there were no rural schools in Palestine. Among the Jews, however, the smallest settlements have their schools.

An examination of over 10,000 school children made in 1913 by Frigenbaum, Krimkin, and Ticho, in Jerusalem, Jaffa, and the Jewish colonies showed an incidence of 30 per cent. In 1920 there was an incidence of 98 per cent. among the children in the Arabic school in Beersheba and 51 per cent. in the Catholic Orphanage in Jerusalem. The prevalence of trachoma increases in the more southerly parts of the country and in settlements further removed from cities. It increases also under conditions of poverty, malnutrition, dirt, &c. The incidence in Palestine is in inverse relation to the age; in other words, here trachoma is a disease of young children and diminishes in extent among the later age groups. This is uniformly the case in the school examinations where the greatest number of fresh cases are found in the kindergartern and lower classes, whereas in the higher classes there are fewer of these forms and more of the cicatrised types. I have found here, as did Meyerhof in Egypt, fresh infection in children 3 months old, and the infectivity may be said to increase to the seventh year. This is strikingly illustrated by the table and the figure showing the age incidence of

Age Incidence of Trachoma among Jewish School Children in Jerusalem (May–June, 1921).

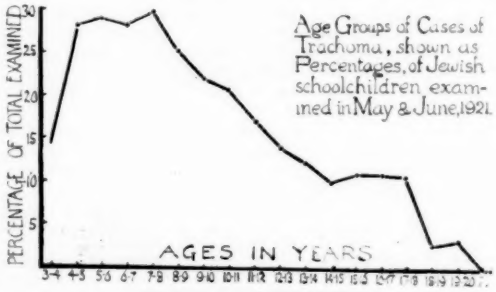
Age.	No. exam.	Trachoma positive.	% of trachoma.	Age.	No. exam.	Trachoma positive.	% of trachoma.
3– 4	205	29	14·1	13–14	427	54	12·6
4– 5	293	83	28·3	14–15	383	39	10·2
5– 6	333	96	28·8	15–16	212	21	11·0
6– 7	547	154	28·2	16–17	136	15	11·0
7– 8	502	151	30·1	17–18	83	9	10·8
8– 9	598	151	25·3	18–19	74	2	2·7
9–10	629	140	22·3	19–20	30	1	3·3
10–11	637	132	20·7	20	27	—	—
11–12	516	91	17·2				
12–13	537	76	14·2	Total	6169	1244	20·1

trachoma in the Jewish schools of Jerusalem. In the schools fresh infections rarely occur. Trachoma is found only among children who are not admitted with the disease, and new infections are not more common than one to a school during the entire year, provided suppurative types are excluded from the school. Infections are much more common among the children at home than among those in school.

Diagnosis.

One of the reasons for the lack of accurate statistics is the difficulty of diagnosis of trachoma, particularly in the early stages. Trachoma has a series of symptoms found also in other eye diseases. The suppuration included by Fuchs in his definition may be absent. In young school children one finds early cases without secretions and with typically localised granules; solid follicles are also found in catarrhal and acute conjunctivitis; papillæ are found also in gonococcal conjunctivitis, &c. Much importance is attributed to the presence of cicatrisation, but apart from the fact that the diagnosis cannot wait until cicatrisation appears, there are many cases without macroscopic cicatrisation, particularly among children.

To the practised eye, however, the difficulty is not really as great as it may appear. The cicatrice in the sulcus subtarsalis is so characteristic that a diagnosis can be readily made by lifting the upper lid; this



cicatrice resembles a chain of hyphens. The presence of solid follicles typically localised (sulcus subtarsalis, transition folds, conjunctiva of the tarsus, plica semilunaris) is also diagnostic. Soft granules, cicatrice, and papillæ which resist treatment are all diagnostic. Nevertheless many cases must remain doubtful.

Relation to Other Conjunctivitis.

A word must be said of the relation of trachoma to other conjunctivitis. A mixed infection of trachoma and scrofulosis resists treatment, leads by way of photophobia and secretion to serious injury to the cornea. Mixed infections with Morax-Axenfeld's diplobacillus also increases the difficulty of therapy. The effect of Koch-Weeks and gonococcal infections is interesting, because epidemics of both of these forms of conjunctivitis occur here every summer. The Koch-Weeks conjunctivitis retards diagnosis of trachoma by the presence of follicles and secretion. The acute papilla in apparently cured cases of trachoma as well as the acute pannus which accompany this type of mixed infection affect favourably the course of the trachoma. Gonococcal infections, which are epidemic from September to January, are the chief cause of blindness, but in many cases, when mixed with trachoma, they protect the eyes against total blindness by the appearance of acute pannus, which covers the cornea with a protective film and prevents destructive ulceration.

Treatment.

Folk superstitions and therapy exist here as in Europe, as does also the idea that the evil eye is a cause of many illnesses. Hot irons and blood-letting are employed and are evidenced by scars on the temples, gangrenous or scar-contracted lids, &c. These injuries are produced with the belief that by their continued suppuration they will bring about a cure of the eye affection. Suppurating or inflamed eyes are often bandaged, and over the bandage is placed a red stone (which is supposed to extract the heat from the inflamed eye), a small coin, and a piece of garlic strung on a thread which is tied to the hair or cap. Washing of the head during the illness is prohibited.

For therapy the physician must know the peculiarities of the local forms of trachoma. From the simple fresh forms, which can be treated by conservative means, there are transitions to the bony thickening of the tarsus, pannus, &c., which require radical surgical treatment. The most important method of treatment involves the removal of the tarsus with or without the involved conjunctiva. In trichiasis it is as a rule necessary to form a new

lining by implantation of the mucous membrane of the lip. The important thing to bear in mind is that treatment of trachoma must be carried on on a large scale and is not merely a question of treating individuals.

PART II., by I. J. KLIGLER.

The ætiology of trachoma is as yet undetermined. There is general agreement with regard to its infectious nature, but there is a great deal of dissension as to the specific cause. Some observers even deny that it is a definite entity and contend that various micro-organisms produce the same effect. The difficulty of clearly defining the disease clinically, and the frequent occurrence of mixed infections render a conclusion regarding the ætiology of trachoma impossible until the specific virus is discovered. The work of Halberstädter and Prowazek (1907) shed a great deal of light on this obscure subject and gave a new impetus to the study of the ætiology of trachoma. These authors found in the epithelial cells of the conjunctiva in trachoma infections certain bodies which they called "inclusion bodies." They claimed that these bodies were specific for trachoma and were diagnostic. While the diagnostic value of these "Einschlusskörper" was soon afterwards confirmed by various investigators, their significance has not as yet been established. Prowazek claims that they are specific micro-organisms intermediate between protozoa and bacteria and calls them clamydozoa or mantle bacteria. Herzog, Williams, and others claim that the inclusion bodies are characteristic of a certain type of conjunctivitis, but that they represent disintegrated bacteria, particularly gonococci and Koch-Weeks bacilli.

The Prowazek theory has received strong support from the experimental work of Noguchi and Cohen. These authors produced typical trachoma infections in monkeys, but failed to elicit any reactions by scrotal or intratesticular inoculations in rabbits. With secretion from Koch-Weeks conjunctivitis, however, they obtained marked reactions in rabbits. Noguchi, moreover, succeeded in cultivating from cases of trachoma a distinct minute micro-organism which in some phases of its growth resembled the trachoma bodies. This organism was not, however, pathogenic for monkeys. Williams, on the other hand, after a careful bacteriological study of over 800 cases, concludes that in trachoma "inclusion bodies" are nests of bacteria growing in the epithelial cells—hæmoglobinophilic in some, gonococci in others.

From observations made here in Palestine, trachoma appears to be a specific contagious disease of unknown ætiology. Fresh uncomplicated trachoma is seen, especially in young children of pre-school age. While in the later stages of trachoma mixed infectious streptococci, hæmoglobinophilic bacilli, &c., are common, in fresh cases "inclusion bodies" are found without associated bacteria. Until now material from uncomplicated cases injected into the scrotum or testicles of rabbits has elicited no reaction. Moreover, unlike other forms of conjunctivitis, trachoma does not occur here in epidemic form.

Transmission.

The infectious agent in trachoma is present in the purulent secretions. At this stage the danger of infection is greatest; during the chronic stage infections are the exceptions rather than the rule. Since the fresh suppurative stage is found mostly among the children of pre-school age, the greatest incidence of infection occurs among these young children, and not among the older school children. This is strikingly demonstrated by Table I., and is significant from the standpoint of prevention and control of the disease. The principal mode of transmission is by contact. Flies and dust may play a part, but it is secondary at most. It is noteworthy that there is no marked increase of trachoma during the fly season, while epidemics of other forms of conjunctivitis occur here regularly every summer. In 1920, for example, the positive laboratory examinations for Koch-Weeks conjunctivitis were as follows: June, 7; July, 161; August, 266; September, 127; October, 31; November, 13; December, 0. No such epidemic curve was noted in the trachoma incidence. Similar findings are reported from Egypt.

Control and Eradication.

Despite the unknown ætiology of trachoma, great strides, attributable to a clearer understanding of the nature of the disease and methods of treatment, have been made towards its control. As it is chiefly a disease of children, control means thorough supervision of the school-children, associated with continual treatment. In Jerusalem, for example, all Jewish school-children have been examined and treated under the direction of Dr. Ticho. The children are examined regularly by a physician, and necessary treatment is given to those having trachoma. The treatment is then continued regularly by nurses. By this method the trachoma incidence in the school was reduced from 31·3 per cent. in 1913 to 13 per cent. in 1916, but during the war the percentage has risen again; in 1919 it was 21·7, and in 1921 20·1 in 6169 children. This shows that steady and continuous treatment reduces the incidence; but there remains the unsolved problem of the prevention of new infection. This phase of the attack is beset with many difficulties. Just at the time when the incidence of new infections is greatest the child is not under the supervision of either physician or nurse. Preventive measures, to be effective, must begin in the kindergarten and home. Unfortunately, few of the children come to the kindergarten, and the intelligence of the parents in the groups where trachoma is most prevalent is as a rule very low. Nevertheless a successful attack of the disease necessitates visiting the homes and families of children who are constantly exposed to infections, and examining and treating the families as well as the children of pre-school age. In this way we can find the disease at its onset and intercept its progress.

An important element in the prevention of trachoma is education, which has proved so useful in combating other contagious diseases, but has so far been little employed here. It is well known that trachoma is more prevalent among the poor and unclean than among the well-to-do and clean. As it is a contact infection, dirty habits and crowding facilitate transmission of the virus. Education in the value of cleanliness should prove helpful. Another factor, the significance of which is as yet obscure, is diet. The experiments of Osborn and Mendel and of McCollum, on the relation of dietary deficiency to conjunctivitis, are highly suggestive, promising, indeed, to open a new approach to a difficult problem. An experiment is now being projected to select a section of the town and attack trachoma in its nest by treatment of families, education, and attention to diet. This experiment, and similar ones conducted elsewhere, may lead to a newer and more effective method for the complete eradication of this disease.

CASCADE STOMACH.*

BY J. H. DOUGLAS WEBSTER, M.D., M.R.C.P. EDIN.,

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CASCADE STOMACH, an atypical form of hour-glass stomach, was first differentiated by Rieder. Barclay has recognised it, calling it "cup-and-spill" stomach. Carman's view is that it is "simply an hour-glass in which one portion of the stomach is not directly above the other, but they are shifted laterally." Schütze points out that it is not an hour-glass in the usual sense (with a B or X-shaped incisura or constriction), but more a drawing-up of the posterior wall to such a degree that on the patient's taking the opaque meal only the upper sac at first is visible, filling to a

* A contribution read before the Congress of Radiology and Physiotherapy. The paper, with illustrations, will appear in the Archives of Radiology and Electrotherapy for September.

considerable extent before overflowing in an anterior or medial cascade into the lower sac—this method of filling being very different from that in the usual hour-glass, only very narrow organic hour-glass stomachs showing a considerable delay in the upper sac. Schütze says a third sac has been seen, which he calls a "cascade waterfall," possibly related to the very rare gastric diverticula described by Schlesinger (in a case of duodenal ulcer) and others, Akerlund having had a case with multiple diverticula (four or five) which I saw last year in his clinic. From a conversation with Barclay some time ago, I learnt that he regards the mechanism of cascade stomach as a drawing-up of the greater curvature by the oblique fibres to such a degree as to cause the deformity, and I believe he considers the condition to be entirely spasmodic, as he has seen it present at one examination, and absent at a later view of the same case; according to this view we may think of it as a spasm of the oblique fibres, analogous to the incisura-spasm of the circular fibres.

Observations of Others.

Having two cases to report I have looked up the literature, of which I give a brief résumé. Stierlin had two cases operated on; both showed a callous ulcer at or close to the lesser curvature, the deformity being purely spastic. He has also reported a case with lateral displacement of the sacs. Stupel reports three cases: (1) Tumour in the left hypochondrium, which X ray treatment so reduced that the stomach appearances became normal again; (2) congenital transposition of the cæcum and ascending colon to the left, and a chronic appendix; and (3) a diaphragmatic hernia on the right side, with upward displacement of the colon and liver. Schütze notes especially the "balloon-form" of the upper sac—which my own second case well illustrates—and thinks the primary cause is usually scar or adhesions from old ulcer or peritonitis. In most cases he believes there is an anatomical basis for the deformity which he has observed to a greater or less degree in 30 to 40 cases. Assmann, on the other hand, thinks it is most frequently due to extreme gas-distension in the splenic colon; in a case of tetany with meteorism the post-mortem showed the stomach normal. Another case had a diaphragmatic hernia and extreme gas-distension resulting from tuberculous peritonitis, later examination showing normal appearances; a third case with adhesive peritonitis showed a normal stomach post mortem.

Faulhaber had two cases, one clinically gastric ulcer, with hæmorrhage, pain, &c., but no ulcer was found at operation. His other case had an ulcer involving the pancreas. Schlesinger has had 10 to 12 cases; one at first showed a cascade, but on later examination the stomach appeared normal. One was a duodenal ulcer, confirmed by operation. Schlesinger regards the condition as analogous to hour-glass stomach; in both conditions there are (1) intermittent, and (2) persistent forms, and both can be due to ulcer, or to a nervous or remote cause. Carman says that the causative factors in all the cases he has seen have been "spasm, gas-distension of the colon, large extrinsic tumours or ascites." Von Wilucki describes a case where an extraventricular tumour was the causative factor, the splenic flexure being involved; as with hour-glass, he thinks there is no unity of causation, the condition originating in any of the following: (1) Spasm from gastric or duodenal ulcers, (2) adhesions (perigastritis) or sclerosis of gastric malignant invasions, or (3) extrinsic factors such as gas in the colon, or extraventricular tumours. Zehbe has recorded five cases. The last had extreme meteorism, and was normal at the second examination. Of the other four, one, with a long-continued history of pain and vomiting, was operated on; the pylorus and duodenum could not be at all well visualised in the X ray examination, and at operation adhesions of the stomach to the liver were found. The other three cases showed a widened duodenum, food passing rapidly out of the stomach. He regards the condition as comparable with an œsophageal diverticulum, which fills first, then overflows, and points out most clearly that profile or oblique lateral views are frequently necessary for diagnosis, the usual sagittal view failing to reveal the condition or its mechanism.

Laurell had a case in 1915 which at operation showed a normal stomach; he regards the condition as very frequently normal, and says all gradations between the normal and extreme cascade types are to be met with. When normal he calls it the superior angle of the stomach, comparable with the inferior angle, and—like the latter—sometimes absent (the inferior angle failing entirely or being very poorly marked in steer-horn types). In the profile view in dorsal decubitus he finds this superior angle frequently present; and the normal cascade stomach he regards as an exaggeration of this condition. He classifies cascade stomachs into (1) those without pathological significance: (*a*) The normal cascade form, (*b*) that due to gas-filled colon, by pressure or else by traction; (2) those with pathological significance, grouped as (*a*) the true cascade stomachs, from ulcer, scar, or adhesion, and (*b*) a carcinoma type of cascade deformity. The normal form he finds has usually an antero-posterior relationship of the sac; the lateral displacements he regards as more probably abnormal.

Personal Observations.

My two cases illustrate these two types of displacement.

The first case, a man of 47, with stomach history of some duration, was under the care of Dr. C. E. Lakin at the Middlesex Hospital. The antero-posterior view showed the upper sac and the cascade dropping downwards, while the lateral view showed the condition clearly; there was some irregularity at the angle posteriorly, conceivably the site of a posterior wall ulcer. He was discharged improved after a period of medical treatment. This case seems to be either Schütze's posterior wall contraction (due possibly to posterior wall ulcer), or one of Laurell's normal type.

The second case, a man of 56, with history since boyhood of stomach cramps and vomiting lately becoming worse, was an out-patient of Dr. G. E. S. Ward. Clinical diagnosis, "chronic appendicitis." There was a small 6-hour residue in two places when I first saw him, and a second meal showed an extreme bilocularity of the stomach, the "ballooned" upper sac filling first, then overflowing to the lower. The pyloric region was not well seen, and possibly spastic, so the patient reported again after full doses of belladonna, when a similar condition was found. The contents of the lower sac could easily be pressed up into the upper. The bilocularity was so extreme that two large gas-bubbles were present. By a mistake he went away before I could do a prone duodenal examination. With such long-continued well-marked symptoms and a persistent bilocularity after belladonna I thought he was probably an intrinsic organic hour-glass stomach (a typical cascade form). He was admitted to a surgical ward under the care of Mr. C. H. S. Webb, who operated and found extreme gas-distension of the whole colon, a normal body of the stomach, and an old-healed duodenal ulcer with pyloric narrowing for which a gastro-enterostomy was performed. A very marked and persistent spasm of some of the oblique fibres would account for the type of deformity in this second case.

It is evident from this summary of cases up to the present that the whole subject of "cascade" or "cup-and-spill" stomach requires further observations before organic or spasmodic types can be clearly differentiated; reference to the literature shows it has been seen with (1) local lesser curvature ulcers or adhesions, (2) pyloric and duodenal ulcers; (3) normal stomachs; (4) extreme meteorism, especially with splenic colon gas-distension; and (5) extraventricular tumours.

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(*Continued at foot of next page.*)

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A NOTE ON

DORMANT FILARIAL INFECTION.

BY KENNETH PLAYFAIR, M.B. CAMB.,
MEDICAL REGISTRAR, KING'S COLLEGE HOSPITAL.

THE case of filaria here recorded presents several unusual features.

The patient, a clerk, was admitted to hospital on Feb. 20th, 1922, complaining of shortness of breath following influenza four weeks previously.

Condition on Examination.—He was pale but well-nourished, and any exertion caused distress. There was some cardiac dilatation with a hæmic bruit at the apex. The lungs presented no signs other than a somewhat impaired percussion note at the bases, where a few crepitations were also audible. The abdomen was normal except for a marked ptosis of the liver. The urine was normal, and the bowels regular.

History.—While on service in 1917 in West Africa he contracted malaria and had since had several recurrent attacks of ague. About the same time swellings appeared in both wrists, arms, and above the left eye, which had never received treatment and disappeared spontaneously. A medical officer in casual conversation informed him that these swellings were due to filaria.

Blood Count.—In view of the obvious anæmia a blood count was done, and was as follows: Red blood cells, 2,256,000 per c.cm.; white blood cells, 4800 per c.cm. Differential percentages: Polymorphonuclear 38, eosinophils 45, lymphocytes 10, large mononuclear 6, basophils 1.

The anæmia with the remarkable degree of eosinophilia suggested a possible infection with ankylostoma duodenale or other helminths, but neither worms nor ova were ever discovered in the stools. A search was also made for malarial parasites, but these were never demonstrated at any time. In view of the history of a possible filarial infection the blood was carefully examined, and micro-filariæ were seen in specimens taken from the peripheral circulation both during the evening and in the morning. *Micro-filaria bancrofti* was identified in the evening samples and *Micro-filaria diurna* in the morning, showing the presence of a double infection, which was not heavy as the micro-filariæ were never numerous.

On March 11th the patient awoke totally blind except for perception of bright light when flashed on to the retina. Both eyes were equally affected. The pupils reacted normally and examination of the fundi revealed an acute retro-bulbar neuritis. The vision began to return after 48 hours and rapidly improved until it became normal again at the end of two weeks. While in hospital the patient was treated with iron and arsenic without any appreciable benefit to his anæmia, but the respirations were reduced from 26 to 20 per minute, and all signs in the lungs cleared up. The cardiac condition remained stationary. He was afebrile except for two separate evening rises of temperature to 99·4° and 100° F., during which times the micro-filariæ in the peripheral circulation were not increased, and the presence of malarial parasites was not demonstrated.

Remarks.

The history of influenza during the winter epidemic together with the known fact of the predilection of the micro-filaria for the lung tissue suggests a hypothesis in this case: that the micro-filariæ had lain dormant in the lungs until an attack of influenza affecting the respiratory tract had again released the parasites into the general circulation with the resulting symptoms.

It is not easy to discover any detailed description of the hæmatology in filariasis. In numerous published works of investigators scant attention is paid to the blood picture, and no constant changes have been noted except that an eosinophilia generally exists. Bahr and Low have shown that the parasite leads to a glandular fibrosis associated with an excessive number of eosinophile cells. Castellani and Chalmers state that filariasis does not exhibit anæmia unless associated with hæmatochyluria or diarrhœa, neither of which was present in this case. Grall and Clarac, who give the best account of the hæmatology, report that Ricot found 5 to 15 per cent. and Bescançon and Labbé 4 to 8 per cent. eosinophilia in filaria, and that Remlinger found a 70 per cent. eosinophilia in one case with chyluria. The double infection, retro-bulbar neuritis, marked secondary anæmia with high eosinophilia without any other usual complications of filarial infection impart considerable interest to this case.

The patient was under the care of Dr. Norman Dalton, to whom I am indebted for permission to publish these details.

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A CASE OF

RUPTURE OF THE CORD DURING FORCEPS DELIVERY.

BY W. E. LEE, M.D. LOND., F.R.C.S. ENG.,
AND
J. S. LESLIE, M.R.C.S., L.R.C.P. LOND.

THE case here recorded is sufficiently unusual to deserve mention.

History.—The patient, aged 26, was married in October, 1919. Her last period began on Dec. 12th, 1921, and ended on the 18th. The early part of her pregnancy was marked by much vomiting, which subsided, and she pursued a normal course until the beginning of June, 1922, when her abdomen swelled very rapidly.

Condition on Examination.—On June 21st she was seen by one of us (J. S. L.), who found the uterus very large with an excess of liquor amnii. On the 22nd the uterus reached to the ensiform cartilage; there was difficulty in making out the presentation; her pulse was 100; respiration 26; she complained of difficulty in lying down and in moving. On the 23rd, under anæsthesia, the general condition was the same, but her pulse had risen to 110, and her temperature to 99·2° F.; the external os was easily dilated with the finger, and the cervical canal was found dilated, the membranes were separated and then punctured. About 1¼ gallons of liquor amnii escaped, fresh, unstained.

Labour and Delivery.—After a fairly comfortable day labour began about 7 P.M., and continued with regular pains until 6.30 A.M. on the 24th, when, as she was getting exhausted, an anæsthetic was given. The os was then a little smaller than a crown piece, and rather rigid; after manual dilatation the forceps were applied to the head, which was a curious rounded shape, feeling like a large tennis ball. Delivery was difficult for a time, with great resistance to the pull; this resistance gave way suddenly, and delivery was accomplished at 7.20 A.M., when the cord was found to be completely torn across at 2 inches from the fœtal navel. There was no hæmorrhage at the time of the sudden giving way of resistance, and clear unstained liquor amnii escaped after the shoulders were delivered. The placenta was large but otherwise normal, and was delivered very easily directly after the child was born. The child, born dead, was generally dropsical, and the head contained a large amount of fluid between the skull vault and the skin, and in the cranial cavity. The mother did well, but still has a little albumin in her urine.

I can find in the literature no exact parallel with this case. De Lee in his book records one case where the cord was ruptured 8 inches from the umbilicus, and another where the cord was caught between the forceps and the head, and cut as if with a knife. Sequeira[1] records a case of rupture of the umbilical

[1] Brit. Med. Jour., 1895, i., 866.

(*Continued from preceding page.*)

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cord at its placental insertion during normal delivery, the child being born alive. Werder[2] has discussed the whole question, recording a forceps case of his own where the cord was torn at the umbilicus, together with part of the abdominal wall, the child also having spina bifida. He found from the literature of the subject that a velamentous insertion of the cord is the common cause (it was not so in his case), and that cases of detachment of the placenta are uncommon, this being due to moulding on the fœtus internally, and compression from the outside by uterine contraction.

A large part of the literature has been written in the Spanish language; these, and many other references on the subject, we have been unable to obtain.

A NOTE ON A CASE OF

CARCINOMA MAMMÆ.

BY G. H. COLT, M.B. CAMB., F.R.C.S. ENG.,
ASSISTANT SURGEON, ROYAL INFIRMARY, ABERDEEN.

THE records at the Aberdeen Royal Infirmary show that on August 30th, 1890, a female patient, aged 35, was operated upon by the late Dr. Mackenzie Booth for carcinoma mammæ. There is no further record of the case and no record of a microscopical examination. In 1915 the patient remembered that this tumour of the *right* breast had been noticed for a year before her third child was born, that the child was 11 months old at the time of the operation, and that she had suckled it from both breasts until a week before. The swelling was "a good big one." In August, 1915, the patient noticed a painless nodule in the *left* breast.

Condition on Examination.—Patient was a thin woman in good general health, and had a tumour about 1¼ inches across in the upper and inner quadrant of the left breast, with a hard mass of glands in the left axilla. The supraclavicular glands on the left side were palpable, being discrete and shotty. There was a sound scar, supple and healthy, extending from the middle of the right axilla downwards and forwards for a distance of 7 inches, and there was no sign of the nipple or of mammary tissue in this region. The pectoralis major was present. There was no axillary or supraclavicular enlargement on the right side and no evidence of visceral disease.

Course of Case.—In October, 1915, I removed the left breast and axillary contents with a wide area of skin and a wider one of deep fascia, together with both pectoral muscles. The supraclavicular glands were not removed. The pathological report was "spheroidal-celled carcinoma with extensive infiltration of the axillary glands." In July, 1919, a colleague removed a recurrence from over the left fifth rib. In January, 1920, the left supraclavicular glands were apparently in the same condition as originally noted in 1915. X ray treatment was carried out in August and September, 1920, and repeated in January, February, and March, 1921.

In July, 1921, there was a hard mass about half an inch across, situated in the middle of the original scar of the operation on the right breast, nearly 31 years before. Another small, hard mass was felt in the right axilla. The right supraclavicular glands were not enlarged, but the left glands were larger and softer than before. There was no local recurrence on the left side. Thereafter there was little change externally, but signs of right pleural effusion developed and the patient died in October, 1921, aged 66, more than 31 years after the operation on the right breast, and six years after the operation for carcinoma of the left breast. There was no post-mortem examination.

In the absence of definite information as to the nature of the original tumour in the right breast and in view of the appearance of the nodules in the original scar (right) late in the course of the disease of the left breast, it seems to me that these nodules were embolic in origin, the emboli having been arrested where the lymphatic tissue was interrupted by the old scar. It is my practice to examine every case of malignant disease after operation at least four times a year, and I think the dates may be accepted as approximately correct.

[2] American Jour. of Obstetrics, 1899.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING AT GLASGOW.

(Concluded from p. 672.)

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

WEDNESDAY, JULY 26TH.

STILLBIRTHS AND NEONATAL DEATHS.

AT this session Prof. EWEN J. MACLEAN (Cardiff) presided. The opening paper of the discussion was read by Dr. J. W. BALLANTYNE (Edinburgh), who dealt with

Antenatal, Intranatal, and Neonatal Death; Causes, Pathology, and Prevention,

with special reference to antenatal death. He referred to the great advances which had been made in our knowledge of these subjects since the preceding meeting of the Association in Glasgow in 1888, when the causes of intra-uterine death were discussed by the leading obstetricians of that time. Dr. Ballantyne proceeded to deal most minutely with the physiological changes which characterised the various stages in the development of the product of human conception—the pre-germinal, the germinal, the embryonic, the fœtal, the intranatal, and the neonatal stages. He classified precisely the factors which operated at each of these stages to cause disease or death of this product, and indicated how imperfect was our knowledge of the pathology of these conditions, particularly of the antenatal stages. The maceration of the ovum or fœtus must no longer be allowed to prevent minute investigation of the tissues of such casualties. The action of the germs and toxins which reach the ovum from the maternal blood-stream must be studied further, and the protective action of the placenta towards the fœtus more definitely investigated. The result of such study should enable us to reduce very greatly the enormous losses now occurring in this stage of development. At present syphilis was practically the only condition which we could treat with precision at this stage. Dr. Ballantyne then outlined the methods by which the casualties occurring in the antenatal and neonatal stages might be prevented. 1. Every morbid condition of the mother which may be detected during her pregnancy should be watched for and treated. Such conditions include albuminuria, syphilis, and the exanthemata. 2. Every anomaly in the relation of the fœtus to the mother in the obstetric sense should be diagnosed and corrected before the onset of labour. By such obstetric prevision it is possible to prevent the arrival in labour of an occipito-posterior or a breech presentation, to make an early diagnosis and so prevent the extreme exsanguination which may result from a placenta prævia, and also to eliminate craniotomies resulting from an undiagnosed disproportion between the fœtal head and the maternal pelvis. 3. All the existing methods of delivery should be revised completely in the interests of the fœtus. Should a healthy fœtus with a good fœtal heart be used as the plug to arrest placental hæmorrhage in an early diagnosed case of central placenta prævia? Should such a case not be treated by Cæsarean section? 4. The various lesions which occur in the new-born child should be more accurately diagnosed, and suitable treatment adopted for each individual case. Schultze's method of artificial respiration is surely not correct for an infant when blood is oozing into the lateral ventricles of its brain. Dr. Ballantyne went on to describe the results which had attended the exercise of these principles in the Royal Maternity Hospital in Edinburgh. Over the whole city of Edinburgh birth notifications showed a stillbirth incidence of 47·8 per 1000. The Maternity Hospital showed a stillbirth rate of 56·3 per 1000, made up of 68·8 per 1000 in the indoor department and 41·2 per 1000 in the outdoor department, the large proportion in the former department being due to the large percentage of abnormal cases found in institutions of this type. In the venereal department the figures were specially interesting. Among such patients who had been supervised

and treated in this department the stillbirth rate was only 50·7 per 1000, whereas among such cases which reached the hospital in labour without having had antenatal supervision or treatment in the department, the stillbirth rate rose to 606·0 per 1000. When the V.D. cases were excluded, the whole practice of the hospital gave a stillbirth rate of 5·9 per 1000 where antenatal supervision had taken place. The inclusion of the supervised V.D. cases brought the numbers up to 13·5 per 1000.

Mr. EARDLEY HOLLAND (London) read a paper on

Intranatal Death,

analysing a series of over 300 such cases. It was remarkable that out of these 300, 133 only were macerated, whereas 167 were killed in the process of labour. Dr. Holland described his classification of the causes of such casualties into (*a*) primary causes, such as contracted pelvis, placenta prævia; and (*b*) consequent factors, such as fœtal asphyxia. He indicated how difficult it was to place some cases, such as the dead child from a case of placenta prævia, into any one rigid compartment of a classification. He proceeded to deal with the various types of fœtal hæmorrhages occurring in the stillborn child, and in particular with the cranial hæmorrhages associated with rupture of the tentorium. These tentorial hæmorrhages were due to stresses occurring in labour, and their extraordinary frequency in breech-born children, in 88 per cent. of them, formed a drastic criticism of our methods of treatment of such cases. Dr. Holland deplored the great hustle to deliver the head in such cases, and recommended a slow and deliberate extraction, made easier by a double episiotomy. He agreed with the opener that all our methods of delivery require revision in the interests of the fœtus.

Prof. LOUISE MCILROY (London) read a paper on

Antenatal Death due to Toxæmia.

She pointed out how closely the welfare of the fœtus depended on the welfare of the mother. The complication of pregnancy by toxæmia always affected the health of the fœtus adversely. While a large amount of exact information has been accumulated regarding the changes in the tissues of the stillborn child, such investigations dealt with the end-results only, and we must try to collect evidence regarding much earlier stages in the disturbances which lead to such fœtal deaths. From such a study we might be able to do much more to serve the interests of the fœtus; at present the tendency was to concentrate on saving the mother. There was an enormous field for study in the prevention of abortion. Prof. McIlroy had found abundant evidence of toxæmia in the cases passing through the antenatal department of the Royal Free Hospital. Pyorrhœa alveolaris and dental caries were so prevalent that the department could provide full-time employment for a dentist. Further evidence of intestinal toxæmia was found in the almost universal constipation and in the frequency of hæmorrhoids. While these conditions might be found in non-pregnant women without any gross impairment of health, they seemed to upset the balance in pregnancy. Many attempts had been made to assess impairment of function in these toxæmias by the examination of the urine and the blood. The deductions from such examinations had been in some instances confusing and contradictory; we were not yet able to draw absolute conclusions from the ammonia-coefficient or from the diastatic content of the urine. Many factors had to be considered in each case. There would seem to be a valuable line of investigation in the bacteriological content of the fæces, and in the search for bodies of the indol and skatol group in the urine. A large amount of work still remained to be done in the investigation of the biochemical changes in pregnancy, and we should obtain useful results more quickly if the Medical Research Council would draw up a definite line of investigation to be followed by each worker.

Dr. F. J. BROWNE (Edinburgh) dealt with

Neonatal Death,

basing his remarks on the investigation of a series of 400 cases of stillbirth, including 153 cases of neonatal death. He divided the causes of such casualties into traumatic and infective. The most interesting feature of the traumatic deaths was the occurrence of hæmorrhages, the incidence of cerebral hæmorrhage being specially frequent in premature children and in breech-births. In the former the vessel walls were very thin. Intra-ventricular hæmorrhage was fairly infrequent but occurred particularly in premature children. In none of the cases of cerebral hæmorrhage was the lesion such as would have been amenable to operative interference. Dr. Browne was of the opinion that these traumatic deaths could be avoided (1) by eliminating breech-births through the employment of prophylactic version; (2) by preventing difficult forceps deliveries through better antenatal supervision; and (3) by limiting the induction of labour to cases which have passed the thirty-fifth week of antenatal life. Among the infective cases, the most frequent cause was syphilis. In many of these cases the history was not clear, the W.R. might be negative, but yet the fœtal organs showed the characteristic histological changes associated with syphilis. Dr. Browne described the appearances of the various organs and demonstrated the lesions by a series of lantern slides. The special tendency in all the organs was to a diffuse fibrosis, the young essential tissues being pressed on by the invading connective tissue. Most important perhaps was the hæmopoietic type of liver tissue found in these cases. The thyroid and thymus glands presented very characteristic changes. The presence of the *Spirochæta pallida* was not constant in the fœtal tissues; it occurred more commonly in the old than in the new cases. The other most frequent type of infective lesions was pneumonia, which often ran a very rapid course and in many cases appeared to have commenced before the process of birth was completed. Dr. Browne advocated (1) the compulsory notification of pregnancy; (2) the institution of special wards for the new-born children on account of their great liability to infection; and (3) the better training of medical students in obstetrics.

Dr. J. N. CRUICKSHANK (Glasgow) dealt with

Syphilis as a Cause of Antenatal Death.

His investigation covered some 3500 W.R's. carried out in over 1000 cases of pregnancy. In the case of the adults there could be no doubt about the validity of the reaction. The cases were unselected and a positive reaction was found in about 9 per cent. of the total, the percentage being about 2 greater among the unmarried mothers than among the others. Among the infants the value of the reaction was less reliable because the result might be due to some antibody transferred from the maternal blood-stream. In some 180 specially observed cases the negative reactions remained negative, whereas many of the positive cases gave negative results at a subsequent examination. In a series of cases of abortion (including all cases up to the end of the sixth month) 6·17 per cent. of the mothers gave a positive reaction and 13·17 per cent. a negative. Of the stillbirths, 18·07 per cent. gave a positive reaction and 15·15 a negative. Among premature births, however, 19·88 gave a negative reaction and 32·54 a positive. These results would tend to show that syphilis was a much greater danger to the progress of pregnancy in the later months than in the earlier.

Dr. G. I. STRACHAN (Cardiff) described the

Placental Changes in Stillbirths.

The syphilitic placenta was the most characteristic, and yet it might not show any naked-eye changes. The study of placental infarction was of the greatest importance; the actual formation of infarctions had been described in one way by T. W. Eden and Whitridge Williams, and in another by James Young. Stillbirths were caused by the ablation of large areas of placenta with associated hæmorrhage. Toxic products might be produced by the devitalised tissues. If the uterine contents were expelled immediately after the damage to the placenta, no change in structure would be visible; if the ovum remained in the uterus, however, changes would occur in the placenta associated with the deprivation of nourishment from the

fœtus and consequent fœtal death and maceration. A macerated fœtus was always associated with an infarcted placenta. Stillbirths resulted from interference with the nutritional function of the placenta.

Dr. T. W. EDEN drew attention to the danger which would result if those members of the profession entrusted with the supervision of pregnant women were not fully trained in everything pertaining to that branch of medicine. He suggested, too, that the surgical atmosphere advocated for cases of labour should never go beyond the aseptic precautions, which were essential, to encourage unnecessary surgical interference.

Dr. A. LAPTHORN SMITH emphasised the necessity for supervision beginning early in pregnancy and not at the onset of labour.

Dr. H. RUSSELL ANDREWS hoped that steps would be taken to standardise the methods of research in antenatal pathology.

Dr. J. WALLACE ANDERSON claimed that women were diffident about attending their family physician throughout the course of their pregnancy. He had found in recent years an increase in the number of toxæmic cases. This he had associated with the greater prevalence of albuminuria in both sexes, which latter condition he believed to be due to the recent epidemics of influenza.

Prof. MUNRO KERR dealt with the delivery of the aftercoming head mentioned by Mr. Eardley Holland, and pointed out the great advantage to be obtained from the use of forceps in these cases.

Prof. R. J. JOHNSTONE (Belfast) condemned Schultze's method of artificial respiration for the new-born; he believed this method killed a large number of babies.

Dr. CLARA STEWART (Leeds) found no difficulty in getting women to attend antenatal clinics—it was much harder to get them to attend their family physicians.

The PRESIDENT advocated for the consulting obstetrician the same waiting policy which was advocated for the general practitioner. The fact that he was so often expected to interfere was no excuse for his doing so. He wondered whether the versions advocated by Dr. Ballantyne for all abnormal cases were always advisable. Were there not some cases in which a breech delivery might be an advantage? With regard to maternity and child welfare, he thought that the specialists and the private practitioners must work hand in hand with the public health authorities.

Reply.

Dr. BALLANTYNE thanked the meeting for the sympathetic reception of the papers. He showed how close had been the coöperation between the public authorities and the profession in Edinburgh in the organisation of the maternity and child welfare services. He described in detail how he converted occipito-posterior positions by the use of pads—he thought the fœtus altered its position because it felt so uncomfortable. He supported strongly the necessity for having the lines of research in these subjects standardised.

A demonstration of specimens by Prof. A. M. KENNEDY and Dr. CRUICKSHANK in the Pathological Museum formed a most useful supplement to the day's discussion.

THURSDAY, JULY 27TH.

At this session, Prof. MACLEAN again presiding, Dr. W. OSBORNE GREENWOOD (Harrogate) introduced a discussion on

Anæsthetics and Analgesics in Labour.

He epitomised the work of Crile and others on the causation of surgical shock, and described the actual changes in the body tissues, especially in the brain, liver, and suprarenal bodies, produced by pain and fear. Changes of the same type were produced by the prolonged administration of such general anæsthetics as chloroform and ether. Therefore, the ordinary type of labour, associated as it was with pain and fear, led to a condition of surgical shock, which was aggravated by the prolonged administration of general anæsthetics. The same principles should be followed for the prevention of shock in the process of labour as were now universally followed in surgical practice. By the use of scopolamine and morphine shock was prevented; while, with proper technique, the process of labour was undisturbed. Dr. Greenwood went on to describe his own technique. The initial doses, from 1/6th to 1/4 gr. of morphia, and from 1/100 to 1/150 gr. of scopolamine, must be regulated by the type of patient—the phlegmatic type requiring less than the excitable, the sedentary or physically poor type less than the athletic. The same differentiation should be continued throughout the whole labour. The subsequent dosage, both as regards intervals and amounts, should not be carried out according to a fixed table, but according to the actual state of the patient. For this purpose the memory test was all-important. The test objects should be absolutely familiar to the patient—the most satisfactory were articles from the baby's toilet basket. The greatest care must be taken to differentiate between amnesia and analgesia. The patient should never be allowed to pass into the stage of analgesia. All violent sensory impressions, such as loud noises and bright lights, should be avoided. The effects on the mother were characteristic. The earliest result was drowsiness, passing later into deep sleep from which the patient was roused by the uterine contractions. The pulse remained of good volume and steady character; the most marked result was that the pulse became slower. This was so characteristic that it might be taken as a sign of good progress; the pulse of the nervous excited patient dropped from 90 or 100 down to 70 or 80. The pupils dilated, and this might lead to slight disturbance of vision which might have to be allowed for in carrying out the memory tests. Dr. Greenwood found no real prolongation of labour. One of the most gratifying effects was the elimination of shock—this effect had been universally admitted. In deciding on danger signals for the mother, there were three which required very close attention: (1) Analgesia, (2) restlessness, and (3) a rapid pulse. This restlessness, which had been so often described as a difficult complication, should not occur if the patient were carefully supervised; restlessness was due to overdosing and tachycardia to the same cause. A great deal had been written about the danger to the child, and bad results had been described. Dr. Greenwood had not had such results with his technique. The child might not breathe satisfactorily when born. The condition was one of oligopnœa; the baby cried as soon as it is born but breathed only at long intervals and then not very deeply; the heart continued to beat regularly. In these cases no vigorous methods of artificial respiration should be used. If kept warm, the child would breathe normally in a few minutes. This oligopnœa was due to the morphia derivative and did not seem to have any lasting deleterious effect on the child. There was no contraindication to the use of a general anæsthetic if it should be required in these scopolamine-morphine cases. Dr. Greenwood did not find the use of forceps more often necessary than in other labours.

A communication by Dr. N. HIRSCHMAN (Edinburgh) was read by Dr. H. G. TAYLOR, in which the author described his experience of 140 cases of labour treated with scopolamine and one or other of the morphia derivatives. He had used a standard dosage, administered at fixed intervals, the patient being left in the care of a nurse. Morphia was seldom repeated because of the danger of oligopnœa in the child. He accepted the occurrence of a danger-period during which the fœtus seemed to be most affected by the injected morphia, and tried to arrange his injections so that birth should not occur within this period. In some cases he had replaced his usual initial 1/4 gr. of morphia by 1/12 gr. of heroin or 2/3 gr. of omnopon. He found that the combination of 1/100 gr. of atropine with the morphia product helped to diminish the respiratory difficulties. On occasion, when the discomfort of the patient was very great before he commenced his injections, he gave a little chloroform to hasten her drowsiness.

The PRESIDENT, while admitting that this practice in the hands of specialists seemed to be very satisfactory, raised the question as to whether this treatment could be handed over to nurses and midwives.

Dr. A. F. MARTIN (Bradford) described a method which he had adopted in the treatment of his labour cases in preference to the alkaloid method. With the latter he had experienced many of the difficulties and dangers described in the report of the Committee of the Royal Society of Medicine which investigated this subject. Now he did not commence his treatment until the os was fully dilated. Then he gave continuously by means of a Junker apparatus small amounts of chloroform, taking care that the corneal reflex was never abolished. With this he combined the administration of 1/2 c.cm. of infundibulin at half-hourly intervals, giving as much as 2 c.cm. in two hours. He found this method very satisfactory and had so treated 33 cases within the last three years. In only one case did he require to apply forceps.

Dr. LAPTHORN SMITH described his experiences of the various hypnotics used in obstetric practice—opium pills, acetanilide, and scopolamine-morphine. He now used 1/4 gr. of morphia with 1/100 gr. of atropine repeated twice if necessary within 12 hours.

Drs. CHALMERS, W. L. RUXTON, and BLAIR each emphasised the difficulties of carrying out the alkaloid treatment in widely distributed private practice.

Dr. RUSSELL ANDREWS drew attention to the grave danger which might ensue from Dr. Martin's use of pituitary extract, owing to the great variations in the strengths of these preparations.

Dr. LAMOND LACKIE was satisfied with his results from the use of scopolamine and morphine: his chief difficulty had been with restless patients.

Dr. J. P. PRELL pointed out what risks to his local reputation a country doctor might incur by attempting any treatment which had the slightest possibility of danger attached to it; most importance would attach itself to any single failure he might have.

Drs. A. C. MILLER and THOMAS found that there was no need for such treatment in their practices.

Dr. J. HENDRY said that in his experience the standard dosage at fixed intervals was unsatisfactory; it was now many years since Gauss said that, if he could find the standard woman, he would decide the standard dose.

Dr. EDEN referred to the fairly adverse report published by the Committee of the Royal Society of Medicine on this subject.

Reply.

Dr. GREENWOOD criticised some points in the technique adopted by the Committee of the Royal Society of Medicine in their investigations. With such methods bad results might be expected. In his opinion the profession should give this subject their most careful attention as a line of advance in the light of research in other branches of medicine rather than as an attempt to meet a popular demand.

The Treatment of Eclampsia.

Dr. EDEN introduced a discussion on the treatment of eclampsia. The importance of the subject might be gauged from the fact that 450 young mothers in their first pregnancies died in this country every year from this disease. Dr. Eden gave an historical summary of the treatment of eclampsia, indicating the steps by which the two present antagonistic schools of treatment had been arrived at. The expectant school, amply justified by the work of Stroganoff with his 8 per cent. mortality, was most ably represented in this country by the Dublin methods of Hastings Tweedy. The interruptive school whose methods include ordinary induction of labour, accouchement forcé and Cæsarean section, had quite as many followers. The pathologists had studied eclampsia with great thoroughness, but their results had done very little to produce improvements in our treatment. The time had come when clinicians must review the results of the methods of treatment now employed, and, after analysis, recommend to the profession the line which appeared to offer the greatest hope of success. At Liverpool this year [1] the obstetricians of the country reviewed the records of 2000 cases of eclampsia treated in hospital, including 1800 cases from Great Britain and 200 from Ireland. It was remarkable that the Irish cases showed a mortality of only 10·25 per cent., whereas the others showed a mortality of 23 per cent. From these analyses several general principles emerged: (1) Eclampsia was a much easier disease to prevent than to cure. The premonitory symptoms were very definite and easily recognised provided the patient attended her physician throughout her pregnancy. An increase in the severity of these symptoms usually responded to immediate treatment with the patient still in her own home. Sometimes, however, these symptoms became so urgent that induction of labour had to be carried out. (2) As soon as the first fit occurred the patient should be removed to hospital without delay. Country patients must be sent by ambulance. By this time the patient required constant skilled supervision, aided by the close coöperation of the laboratory. (3) The cases should be carefully classified. The best criteria for this purpose were (*a*) the amount of albumin in the urine, (*b*) the number and frequency of the fits, and (*c*) the mental condition of the patient, and these three factors must be considered together. As severe cases must be regarded those in which the urine became solid on boiling, in which over ten fits had occurred, and the patient was in a state of coma. The mortality in such cases was five times as great as in the milder cases, and the method of treatment depended on whether the case was mild or severe. (4) In all cases of eclampsia the minimum amount of obstetric interference should be carried out. As justifiable procedures might be instanced induction of labour and the application of low forceps. The results of those procedures were much better than those of Cæsarean section, and very much better than those of accouchement forcé. In 420 mild cases induction and low forceps had a mortality of 5·2 per cent., Cæsarean section 9·8 per cent., and accouchement forcé 25 per cent. In 161 severe cases, those same lines of treatment showed mortalities of 26·3, 43·2, and 60 per cent. respectively. (5) The simplest medical methods gave the best results. Many of the recorded cases showed a plurality of treatment that would have proved a great strain even to a healthy woman. The Dublin method had proved very satisfactory. It required (*a*) constant supervision by nurse and doctor; (*b*) the administration of water only, except in cases of coma when not even that should be given; (*c*) washing out the stomach; (*d*) lavage of the colon, as much as a gallon of fluid being used; (*e*) saline purgatives left in the stomach and colon; (*f*) no obstetric interference until the end of the second stage; (*g*) the administration of morphia in ¼ gr. doses up to a total dose of 1½ gr. Such treatment had proved very successful for mild cases. In severe cases the Dublin method should be amplified by induction of labour if the patient was not in labour, by the use of veratrone if the blood pressure was high, and by the freer use of morphia if the fits were frequent and severe.

The PRESIDENT remarked on the importance of presenting such a definite scheme of treatment for the consideration of the general practitioner.

Dr. JOHN CAMPBELL (Belfast) expressed his satisfaction with the Dublin method. In severe cases not in labour, he ruptured the membranes as a supplementary measure.

Dr. C. E. DOUGLAS (Cupar) had met with only one fatal case in 40 years of practice. He attached the greatest importance to the routine examination of the urine.

[1] THE LANCET, 1922, ii., 144.

Prof. MCILROY regarded the disease as a result of intestinal toxæmia, associated with bad oral hygiene and constipation. She thought that the epigastric pain was due to involvement of the liver. Induction of labour did not seem to her good treatment; the strain of labour produced more toxins.

Dr. LAPTHORN SMITH found sodium bicarbonate very useful; he employed it most conveniently in the form of rhubarb and soda in the very early stages. When the symptoms became more pronounced, he eliminated nitrogen from the diet; with the onset of the convulsions he used morphia, but abhorred chloral. He never induced labour; Cæsarean section was his choice.

Dr. J. LAURIE (Greenock) got good results by purgation in the milder cases; in the most severe cases associated with such symptoms as suppression of urine he performed Cæsarean section. Was any other method likely to give better results in such cases?

Dr. RUSSELL ANDREWS dwelt on the deplorable results following some forms of treatment commonly used—e.g., croton oil found in the bronchi, the serous cavities filled with fluid in cases where saline infusion had been used, and cases in which the too free administration of morphia had been the cause of death.

Dr. BALLANTYNE emphasised the danger to the fœtus when actual eclampsia supervened. The all-important thing was preventive treatment.

Dr. PRELL inquired about the method recommended for the induction of labour, and about the best method of treatment for puerperal cases.

Prof. MUNRO KERR pointed out that the procedure recommended by Dr. Eden was similar to that which had been successfully used by the French school of obstetrics. There was a type of case which did best after Cæsarean section; the difficulty was to find true indications for the operation in eclamptic cases.

Dr. FARQUHAR MURRAY (Newcastle) spoke of his experiences in ante-natal clinics; the statements by the patients about the regularity of bowel movements were most unreliable.

Dr. LEWIS found that his cases of eclampsia were those that had been referred from midwives.

Reply.

Dr. EDEN agreed that midwives must be most carefully instructed in the identification of the early signs of threatened eclampsia. For the induction of labour he had an open mind as to the best method; he used bougies, followed by the rupture of the membranes. Puerperal eclampsia should be treated by the Stroganoff method. He thought that Dr. Laurie would get good results by less drastic methods, even in the most severe cases. It was interesting to note that in the last two years of the war period the eclamptic death-rate fell to about 70 per cent. of the usual rate in England and Wales, whereas in Scotland and Ireland, where the food shortage had never been so marked, the eclamptic death-rate had not altered.

FRIDAY, JULY 28TH.

At this session, with Prof. MACLEAN in the chair, Dr. ROBERT KNOX (London) read a paper on

The Use of Radium and X Rays in Relation to Gynæcology.

He said that such a subject could be most easily dealt with if it were assumed at the beginning that the therapeutic agent in both X rays and radium was the same. Power of penetration and other differences depended on variations in wave-lengths. The gamma ray of radium was more penetrating than any ray produced by an X ray outfit, but the X rays produced more radiation. All radiation therapy must be most carefully measured, and the unit of measure used for this purpose was the amount required to produce erythema of the skin—the so-called "erythema dose." The absorption of rays at different depths had been most carefully measured, use being made of a wax medium which had the same absorptive power as human tissues. In deep therapy the object was to concentrate certain doses at certain depths from the surface, avoiding damage to the skin or other normal tissue through which the rays had to pass. Such damage was avoided by multiplying the areas of skin through which the rays were allowed to enter and focussing the entering rays on the part of the body affected. To secure such results the X ray tube might be made to revolve in an orbit, or the table on which the patient lay might be made to revolve under the tube. The old method was to divide the skin of the abdomen into numerous small areas and apply the rays through each of these. The next factors to be considered were the biological, of which the most important were (*a*) the type of tissue, (*b*) the stage of its life-history and the presence of degenerative changes, and (*c*) the effect on the surrounding normal tissues and the likelihood of these normal tissues regenerating completely. German investigators, particularly of the Erlangen school, had measured the doses required for certain purposes—100 per cent. being the erythema dose. To produce the menopause, 35 per cent. was required; to destroy sarcoma, 70 per cent.; to destroy carcinoma, 110 per cent. Much larger doses were required to destroy healthy muscle tissue or bowel. Dr. Knox considered the measurement of these doses a very bold step; he himself found that apparently similar tissues gave very different responses. In cases of carcinoma of the cervix Dr. Knox used combined treatment, radium applied locally and X rays peripherally. The best local method was the burying of radium emanation needles in the affected tissue—for all these purposes radium emanations had the same effect as actual radium. In cases of this type his local results had been good, but he was not certain about his distant results or the incidence of recurrences. In the treatment of fibroid tumours of the uterus he employed X rays according to one of the approved techniques, though radium might be applied through the uterine cavity. Now much larger doses of X rays were used than formerly—sterilisation could be carried out in one treatment extending over one or two days only, and comprising only two or three doses. Dr. Knox could not support the extravagant German claim of 100 per cent. cures by such methods; he described one of his cases in which his lack of success was associated with the presence of a uterine polypus. He drew special attention to the dangers of skin burns arising from faulty technique and showed slides illustrating such conditions. He carried out the treatment of all his gynæcological cases in coöperation with the gynæcologist. In spite of the fact that he had seen some wonderfully successful results from radium in malignant cases, he still recommended surgical treatment in all cases which were amenable to such treatment. In the course of his paper he gave full notes of some interesting cases.

The PRESIDENT commended the high standard which Dr. Knox had set in his claims for successes, and the broad view which he had taken of the whole field.

Dr. K. M. CHAPMAN (Glasgow) pointed out that she had got good results by ray treatment in cases where submucous fibroids were present. She had also had results which seemed to show that abdominal adhesions were benefited by X ray treatment. She had noticed a rapid improvement in the general condition of patients who were being subjected to sterilisation. She had successfully treated the menorrhagias of adolescents by the radiation of the uterus with the ovaries shielded.

Mr. C. ROWNTREE (London) stated that he had had good results in his inoperable cases of malignant disease since he adopted the policy of coöperation with the radiologist, and of burying the radium tubes in the tissues. Fistulæ were as likely to occur in the ordinary course of the disease as from the application of radium.

Prof. MUNRO KERR found ray therapy very useful in certain types of cases—e.g., in cases of chronic metritis in women near the menopause, in cases of

pelvic effusions, in tuberculous affections of the tubes and ovaries, and in the pre-operative treatment of malignant disease of the cervix. In the case of fibroid tumours he thought that an even more conservative line of treatment was the operation of myomectomy; in the patching up of the myomatous uterus the uterine cavity could be opened without prejudice to the end-result. In the treatment of malignant disease all progress must be regulated and judged by the pathologist's reports.

Dr. A. BURROWS (Manchester) complained that the radiologists of this country are entrusted with the treatment of inoperable cases only. The Erlangen results include operable cases. He did not combine X rays and radium because there were some differences in their qualities; the lethal dose in each was different at different points of the scale. He recommended the use of radium for chorion epithelioma. For epithelioma of the vulva he preferred operative treatment because radium treatment was attended with so much discomfort. For the menorrhagias of puberty he had found the application of 50 mg. of radium to the uterine cavity most useful.

Dr. FARQUHAR MURRAY inquired regarding the employment of pre- and post-operative radiation in malignant disease. The reduction in size of a carcinoma of the cervix, following pre-operative radiation, had been most striking. He wondered whether the radiologists recommended the ray treatment of fibroids which cause hæmorrhages after the menopause. Had Dr. Knox any experience of the treatment of carcinoma of the ovaries by this means?

Prof. MCILROY believed that a fibroid tumour was really only the symptom of a toxæmia. She believed that the post-operative raying of malignant cases was very important.

Dr. H. E. GAMLEN (Newcastle), in recounting his experiences of the ray treatment of malignant disease, regretted that the cases sent to the radiologist are so far advanced. His local results from the use of radium had been good.

Dr. C. D. LOCHRANE (Derby) remarked on the changes in the blood which might result from these concentrated doses and pointed out that the blood changes required to be watched.

Reply.

Dr. KNOX thought, from the action of X rays on keloid tissue, that a favourable effect on abdominal adhesions was not unlikely. With the modern large doses of rays he did not advise the pre- or post-operative raying of malignant cases. He had good results in tuberculous pelvic lesions. He had no experience of the treatment of the fibroid causing bleeding after the menopause, or of the treatment of carcinoma of the ovary. The new methods of treatment were still fairly expensive.

Dr. JOHN CAMPBELL (Belfast) read a paper on

Treatment of Salpingo-oöphoritis.

He said that this condition might arise from ascending infections caused by the gonococcus, the bacillus coli or the streptococcus, or from descending infections caused by the tubercle bacillus. In acute salpingitis the present tendency was towards expectant treatment with a minimum of active interference. Dr. Campbell considered this quite wrong and believed that a case of acute salpingitis should be dealt with in the same manner as a case of acute appendicitis—i.e., by immediate operation. The present method was unsatisfactory, not only because of the immediate danger of leakage from the tube, but also because of the usual sequel—namely, prolonged ill-health. In operative procedures little advantage was gained by opening the posterior fornix and draining—that is only an extension of the expectant treatment. The abdomen should be opened and the tube removed; the ovary should be left except when the patient was over 40. Such a procedure in bilateral lesions caused sterility, but the same disability usually followed the present mode of treatment. In chronic cases treatment was usually called for, either because of (*a*) sterility, or (*b*) prolonged ill-health associated with pelvic pain. In cases of sterility, expectant methods were sometimes successful. Tamponage might be employed; a curettage might be followed by pregnancy, possibly because a hydrosalpinx had been ruptured in the course of the manipulations. Massage of the uterus and tubes had been advocated by some continental schools, and sometimes gave good results. It should be carried out by specially trained nurses. When operation had to be proceeded to, the ovaries should be damaged as little as possible. The ampullary end of the tube should be excised and a new opening formed. When treatment had been called for for the relief of pain, Dr. Campbell removed tubes and ovaries in women over 40; in younger women he carried out the most conservative operation possible, though even in those cases a complete clearance might be necessary. The question of drainage in all cases of pelvic infections was important; he drained in all doubtful cases using gauze drainage through the abdominal wall. When an abscess was pointing into the rectum, he did a preparatory colotomy and left it open for about three months. The administration of vaccines, &c., he regarded as purely ancillary measures.

The PRESIDENT did not agree with the policy of treating an infection of the tube like an infection of the appendix. The end-results of conservatively treated tubes were very different from those of appendix cases similarly treated. Somtimes complete recovery occurred, as proved by the occurrence of a subsequent pregnancy. The incidence of tuberculous infections of the tubes was very important; those cases were usually diagnosed at operation, and Whitridge Williams found that 10 per cent. of all tubes removed proved to be tuberculous. He himself drained only those cases which absolutely required it; he closed up as many cases as possible, and he found that anæsthetic ether was a most valuable antiseptic in the operative toilet of these cases.

Dr. N. STARK (Glasgow) maintained that the tube could not be compared with the appendix, and this view was supported by all the subsequent speakers. Dr. Campbell had not differentiated between salpingitis and "pus tubes." He thought that prophylaxis could do much to prevent salpingitis; the campaign against venereal disease would help in one direction, while the prevention of tuberculosis must begin with the proper supervision of our milk-supply.

Dr. FARQUHAR MURRAY had found Ranken Lyle's method of pouring saline into the abdominal cavity and then closing up completely very effective in infected pelvic cases. He had had neither general peritonitis nor late recurrent abscesses follow this method of treatment.

Dr. S. J. CAMERON (Glasgow) believed that salpingitis cases should be treated expectantly except signs of general peritonitis occur. He drained in cases where the peritoneum has been soiled or where the temperature and pulse were high. In chronic cases he thought that the uterus should be removed as well as the tubes and ovaries; American surgeons now recommended the removal of both ovaries in infected cases in quite young women.

Prof. MCILROY objected very much to the removal of the ovaries at any age. She used vaginal drainage only. In cases of sterility the condition of the husband should always be considered. Radiant heat was very helpful in chronic pelvic inflammations; she thought the beneficial effect of massage was due to the action on the utero-sacral folds.

Prof. MUNRO KERR thought that Dr. Campbell's classification required amendment. While there was the true freshly infected salpingitis, there was also an acute salpingitis occurring as an exacerbation of a chronic salpingitis. The radical treatment of acute salpingitis properly carried out would not stop at removing the infected tube, but would also remove the whole genital tract. In cases requiring drainage, he packed the pelvis with gauze and drained per vaginam. In chronic cases the uterus, including the cervix, should be removed with the tubes and ovaries.

Pelvic massage was never devised for tubes containing pus; it was intended for sclerosed tubes.

Prof. JOHNSTONE found a type of chronic case in which only the outer two-thirds of the tube were infected, and where the stump of the tube could be left in situ. He had gone through all the phases of drainage, complete closure of the abdomen, &c.; now he drained his doubtful cases through the abdomen with corrugated rubber.

Dr. CAMPBELL held that all pelvic inflammations were the same from the surgical point of view. He accepted Prof. Munro Kerr's revision of the classification of acute salpingitis. In spite of all the objections that had been raised he still held that an acutely inflamed appendix and an acutely inflamed tube should be treated in exactly the same way. As he had already stated, he tried to save the ovaries in all women under 40.

Vaginal Involvement in Cancer of the Cervix.

Dr. ARCHIBALD LEITCH (London) read a short paper on Vaginal Involvement in Cancer of the Cervix. He had investigated carefully the records of 915 cases of cancer of the cervix which had gone to post-mortem examination; 97·5 per cent. of these cases showed vaginal extensions. The involvement of the parametrium and of the glands could easily be identified; he had never found involvement of the utero-sacral folds or of the lateral sacral glands. He was sure that this vaginal extension, by far the commonest form of spread, could be identified during life by microscopic examination. The spread was a lymphatic spread; it could not be a form of contact ulcer as such things did not occur on septic surfaces. The extensions could be identified in three forms: (1) Little red dots on the vaginal wall where the mucous membrane dips inwards, (2) little interpolated areas with only superficial involvement, and (3) cornified patches occurring over the vaginal vault. Those areas were undoubtedly the precursors of general carcinomatous spread, and this must be allowed for by the surgeon removing a wide cuff of vaginal mucous membrane.

Reviews and Notices of Books.

RESPIRATION.

By J. S. HALDANE, M.D., LL.D., F.R.S., Fellow of New College, Oxford; Hon. Professor, Birmingham University. London: Humphrey Milford, Oxford University Press. New Haven: Yale University Press. 1922. Pp. 427. 28*s*.

THE present volume, delayed in publication owing to the war, represents an expansion of the author's Silliman lectures given in 1916. An abridged presentation of the same lectures appeared in 1917 under the title "Organism and Environment as Illustrated by the Physiology of Breathing," but the later book is much broader in scope. The relation of the whole subject of the physiology and pathology of respiration to what the author calls "organic regulation" cannot be expressed better than in his own words. "From a consideration of the general characteristics which distinguish a living organism from a machine I had become convinced that a living organism cannot be studied piece by piece separately as the parts of a machine can be studied, the working of the whole machine being deduced synthetically from the separate study of each of the parts. A living organism is contantly showing itself to be a self-maintaining whole, and each part must therefore always be behaving as a part of such a self-maintaining whole. In the existing knowledge of the physiology of breathing this characteristic could not be clearly traced. The regulation of breathing did not, as represented in the existing theories, appear to be determined in accordance with the requirements of the body as a whole; and for this reason I doubted the correctness of these theories, and suspected that errors had arisen through the mistake of not studying the breathing as one of the coördinated activities of the whole body." This is the essence of Dr. Haldane's neo-vitalism, and we hope that not a few mechanists may discern in this view also a new "mechanistic" conception capable of bridging a regrettable gap. Indeed, in former Silliman lectures, the importance of integration in physiology has been ably pointed out.[1]

When we see how much of the contents of Dr. Haldane's book are in reality the outcome of his own investigations, we cannot but be reminded of the fruitful service that he has rendered to physiology and experimental medicine by his devotion for 30 active years to research guided by these principles. He has inquired of the bodily functions not only how, but why? And he has not often asked in vain. After a brief historical introduction, the parts played respectively by carbon dioxide and by the nervous system in the regulation of breathing are discussed; then the carriage of gases by the blood, anoxæmia, the reaction of the blood, acidosis, and gas secretion in the lungs and swim bladder are dealt with in detail. On the question of oxygen secretion, however, we cannot think that the last word has been said, or that Dr. Haldane has displayed such critical insight in dealing with his opponents as he shows in the remainder of the book. The chapter which follows deals with the relation between circulation and respiration, which is, as all physiologists now know, an exquisite illustration of the wonderful coördination which obtains in the performance of bodily functions; it is handled with masterly skill. So also are the chapters dealing with the effects of air of abnormal composition or at abnormal pressures; in these branches especially Dr. Haldane's name commands high respect, and the technical advances which the subjects of ventilation, caisson work, mining, and aeronautics have reaped from the results of his work are still unexhausted.

The author has raised a landmark in physiology which is worthy of the fine traditions of the Silliman Memorial Lectures; we feel a little regret that he has appeared so unconscious of the permanent value of his labour as to have omitted from it such an important item as an adequate index. A larger and collected bibliography would also have been welcome.

[1] The Integrative Action of the Nervous System. By Prof. C. S. Sherrington. 1906.

SURGICAL DISEASES OF CHILDREN.

A Handbook for Students and Practitioners. By FREDERICK C. PYBUS, M.S., F.R.C.S., Assistant Surgeon, Royal Victoria Infirmary, Newcastle-on-Tyne. London: H. K. Lewis and Co., Ltd. 1922. Pp. xviii. + 408. 18*s*.

IT is so long since a book on the surgical diseases of children was published in this country that this volume is particularly welcome. The author in his preface explains that he has not attempted to write a complete treatise, but claims—with some justification—to have included all the conditions commonly met with in practice. His book is composed largely of a collection of articles published in various medical journals; the clearness of the writing and the soundness of the advice given is remarkably consistent throughout. The general arrangement of the chapters is good, though we fail to see any advantage in considering separately tonsils and adenoids.

The opening chapter on examination and general treatment will be found most useful by the student. The uselessness, and even harmfulness, of unnecessary purgation and prolonged starvation as a routine before anæsthetisation is insisted upon. The sections on tuberculosis of the cervical glands, acute osteitis, and pyogenic arthritis show special merit. More might have been said about the general treatment of tuberculosis of bones and joints; the author seems to us unduly optimistic about the treatment of spinal

caries by bone-grafting in children of the hospital class. In this last his views are antagonistic to the bulk of surgical opinion not only in this country but also in France and America. There are a few slips, as on p. 11, where the cleft of the alveolus in hare-lip and cleft palate is placed between the pre-maxilla and maxilla; there is some ambiguity as to which Thomas's splint is referred to on p. 86. The author's treatment of spastic paralysis appears to require reconsideration. Lengthening of the tendo Achilles with fixation for three months in the *over*-corrected position is surely fraught with grave risk of changing a spastic equinus into a spastic calcaneus, a state worse than the first, while the transference of the pronator radii teres through the interosseous membrane to a point on the radius adjacent to its original insertion, an operation devised by Tubby many years ago, has no sound mechanical basis, and gives no better results than simple division of that muscle.

The illustrations are excellent, the index adequate, and the book should prove of the greatest service to students and practitioners.

LES ULCÈRES DIGESTIFS.

By PAUL CARNOT, Professeur à la Faculté de Médecine de Paris; PAUL HARVIER, Médecin des Hôpitaux, Paris; and PAUL MATHIEU, Professeur agrégé à la Faculté de Paris. Paris: Baillière et Fils. 1922. Pp. 159. Fr.8.

IN this little book, issued at a most modest price, are incorporated the teachings of the staff of the Hôpital Beaujon on the subject of peptic ulcer. Diagnosis and treatment alone are dealt with, and in a small space the writers have compressed a great deal of knowledge which now stands admirably arranged for the student or practitioner. To the English reader it seems remarkable that no stress is laid on the importance of septic foci in the mouth or elsewhere as a cause of embolic ulcer, but apart from this detail the views expressed by Prof. Carnot and his colleagues will be approved by teachers everywhere.

SANITATION IN INDIA.

Third edition. By J. A. TURNER, M.D., D.P.H., late Executive Health Officer, Bombay, and Others. Bombay: Times of India. 1922. Pp. 1130.

SINCE the publication of the first edition in 1914 this work has been enlarged and improved. Dr. Turner deals fully with legal enactments, by-laws, and instructions to medical officers, and what may be termed the legal mechanism of sanitation, especially as it should be applied to urban areas in India. Valuable instructions are added in this edition on the medical inspection of schools, although the writer omits to say that many schoolmasters in India are paid 3 rupees a month, and that 95 per cent. at least of the schools have no latrine accommodation at all. Medical inspection of such primitive institutions as these can hardly be of an elaborate nature. The chapter on collection, removal, and disposal of sewage contains no mention of those very useful appliances in hot countries—namely, the septic tank latrine, the soakage pit, and the pit latrine. The fact that little place is given to describing the laying-out and management of a trenching ground, the commonest disposal method in India, and that the incineration of night-soil is not even mentioned, has its explanation therein that the writer has given a picture of the Bombay aspect of sanitation with which he was himself concerned. The book will in consequence be of less help to the officer faced with the difficulty of sanitating small villages in hot climates. India is a large country, and the habits and customs in relation to health set out in Chapter IX. would not apply equally to residents in the Punjab or Madras. While, therefore, the book cannot be regarded as a complete guide to Indian sanitation, urban and rural, it nevertheless contains a good deal of useful information.

NORMAL OBSTETRIC PRACTICE.

Traité pratique d'obstétrique normale et de puériculture pré et post-natal. By J. M. ROUVIER, Professeur de Clinique Obstétricale à la Faculté de Médecine d'Alger. Paris: A. Maloine et Fils. 1922. Pp. 832.

THIS work differs in many respects from the ordinary text-book on obstetric medicine, as it deals only with normal pregnancy and labour and their sequelæ. Much space is devoted to a consideration of the care of the infant both before and after birth. The author points out that the tendency is for modern obstetrics to become more and more conservative; in this he sees nothing but good, and he believes that greater importance should be laid on the conduct of normal confinements, since they are much more frequent than those which are abnormal or call for any artificial interference. He lays great stress upon the prevention of the accidents of childbirth and of the conditions which tend to lead to difficult deliveries, and more especially on the prevention of the many injurious factors which interfere with the proper development of the fœtus, of the new-born child, and of the nursling. In conformity with this view a large part of the work, some 380 pages, is devoted to puericulture.

The work is very thorough and should prove very useful to those for whom it is written.

DISEASES OF THE KIDNEYS, URETERS AND BLADDER.

Second edition. By HOWARD A. KELLY, M.D., LL.D., and CURTIS F. BURNAM, M.D. London and New York: D. Appleton and Co. 1922. In two volumes. Pp. 582. 63*s*.

THIS edition of an important work contains a great deal of new material. The feature that distinguishes the book from the majority of works on urology is the attention it pays to lesions of the urinary system in the female sex. It is written mainly from this standpoint, and urinary problems in the male receive only secondary consideration. Vol. I. deals extensively with anatomy and physiology. Indeed, the anatomy of the kidney and its relation to neighbouring organs is more fully described than in any work we have yet seen. Chapter II. on the Relation of the Kidneys to the Neighbouring Organs contains such an overwhelming mass of anatomical facts that it will appeal to the pure anatomist rather than to the operating surgeon. The variations in the relations of the kidney seen in different individuals is described, as well as the exact distribution of peri-renal and retro-renal fat. Chapter III. deals in an equally complete manner with the embryology of the urogenital apparatus, and Chapters IV. and V. with the intimate anatomy of the kidney and ureter.

Dr. Kelly's name is particularly associated with the direct aerocystoscopic method of examination of the bladder, and it is therefore not surprising to find that the technique of direct cystoscopy is fully described. While admitting that the prism type of cystoscopy with water dilatation of the bladder is superior to aerocystoscopy in males, the authors are of the opinion that in the female the direct method, as originally described by Kelly in 1893, is the best. They claim for it simplicity and greater ease in overcoming any difficulties due to diminished capacity of the bladder and bleeding. A useful chapter is that dealing with methods of employing X rays in urological diagnosis, and especially interesting are the composite radiograms showing the common situations for shadows thrown by renal and ureteral calculi and phleboliths. These have been obtained by marking on a normal radiogram the situations of shadows in 100 cases of renal and 100 cases of ureteral stone. As a contrast is given a similar composite photograph in which the positions of the shadows in 100 cases of phleboliths are marked. In addition some useful hints are given on the interpretation of doubtful shadows, many of these following the rules laid down by Mr. Hurry Fenwick. The first volume concludes with different methods of

exposing the kidney, and with the treatment and diagnosis of hydronephrosis and movable kidney.

In Vol. II., methods of diagnosing ureteral calculi are described. It was Dr. Kelly who in 1895 first reported the use of wax-tipped bougies as a method of detecting the presence of calculi impacted in the ureter. A detailed description of this useful proceeding is given in Chapter XXII. The method is especially useful in differentiating calculus in the ureter from other causes of obstruction, such as stricture; in the authors' opinion stricture of the ureter is a not uncommon condition. It may be inflammatory, traumatic, or congenital in origin, and, according to the authors, its origin follows this order of frequency. The method of treatment advocated is dilatation by means of graduated bougies.

The work is profusely illustrated; most of the pictures have been well chosen and the technique of their reproduction is excellent; some are redundant, such as the numerous examples of scratches imparted to wax-tipped bougies by calculi. Throughout the book references are made to the work of other urologists, though perhaps undue prominence has been given to the work of American genito-urinary surgeons in contrast to that of eminent French and British urologists. Urology has attained a definite position as a specialty in America, and has acquired an individuality of its own. This book should be regarded not so much as a general work on genito-urinary surgery, but as an American treatise on urology from the standpoint of the female sex. As such it can be warmly recommended.

PHARMACOPŒIAS.

A Compendium of the Pharmacopœias and Formularies. Sixth edition. By C. J. S. THOMPSON, M.B.E. London: John Bale, Sons, and Danielsson, Ltd. 1922. Pp. xxiv. + 398. 10*s*.

THIS book is truly the Whitaker of pharmacy, therapeutics, and the allied arts and sciences; the longer it is studied the more does the amount and variety of its information fill the mind with wonder. One has only to mention, and mention carries praise with it, some of the numerous classes of information which one may find here and which one could not get, or could only get in scattered form, elsewhere. "Synonyms for drugs and chemicals, and preparations used in medicine," tells us the proprietary and popular names of many drugs we use. It is always worrying not to be able to recognise some preparation because it is spoken of by a technical or a popular name. "Notes on useful drugs in pharmacopœias of continental and other countries" will help the man who is reading foreign articles and does not know what the remedies there mentioned correspond to in our English nomenclature. "Doses of drugs for animals in veterinary practice," which states how much of the ordinary drugs, such as ipecacuanha, opium, or magnesium sulphate, should be given to horse, ox, sheep, pig, and dog, is certainly unexpected but may be useful to the rural practitioner. "Modern remedies, official and non-official," includes most of the proprietary drugs which one is likely to want to look up as regards solubility and dose. "Unofficial and useful formulæ" is a B.P. codex in short. "Medical terms and phrases" in French, German, Italian, and Spanish, is somewhat curtailed for a subject of so wide a scope, but may serve as an introduction to the unlearned. Besides the tables with these headings there are dozens of other useful schedules, and the book is a marvel of compression.

The Pharmacopœia of King's College Hospital. Compiled with the assistance of E. B. FAIRWEATHER, F.C.S., M.P.S., Chief Pharmacist to the Hospital. London: Adlard and Son and West Newman, Ltd. 1922. Pp. 169. 3*s*. 6*d*.

WE hope that copies of former editions of this book, which came into existence 65 years ago, are preserved at the hospital, and we suggest that when it is reissued a list of these editions should be printed in it. Besides the formulæ of the main body of the work there are special formulæ for children, and the appendix contains satisfactory sections on food preparation, infant feeding, diet in diabetes, external therapeutic measures, urine testing, stains, and poisons. Formularies are mainly restricted to B.P. preparations. The book is well and carefully worked out.

DISPENSING MADE EASY.

Fifth edition. By W. G. SUTHERLAND, M.B. Aberd. Revised by A. L. TAYLOR, Ph.C., M.P.S., Pharmacist, Bristol Infirmary. Bristol: John Wright and Sons, Ltd. 1922. Pp. viii. + 98. 6*s*.

THIS book deals almost as much with prescribing as with dispensing. It describes in brief outline the dispensary, its stock and fittings; then follow remarks about the handling of mixtures, viscous fluids, and ointments. Methods for disguising medicines, removing stoppers, wrapping, and labelling are discussed. A large number of formulæ for use in general practice and for workhouse and parish practice occupy about 70 pages, and five tables for alcohol dilution, solution percentages, solubilities, doses, and weights and measures bring the book to a conclusion. A number of blank pages are provided for the physician's notes.

A useful little book that has evidently proved popular.

VETERINARY ANATOMY.

The Topographical Anatomy of the Thorax and Abdomen of the Horse. By O. CHARNOCK BRADLEY, M.D., D.Sc., M.R.C.V.S., Principal Royal (Dick) Veterinary College, Edinburgh; Lecturer on Comparative Anatomy, University of Edinburgh. Edinburgh: W. Green and Son, Ltd. 1922. With 85 figures. Pp. 195. 21*s*.

THIS book, excellently bound and produced, is the fifth of the Edinburgh Veterinary Series. It is a worthy effort in a field that has lain almost fallow in this country since Prof. Strangeways's anatomical lectures were published in 1869. The work comprises a full account of the anatomy of the abdomen and thorax of the horse, and contains good illustrations. The general format of the volume reminds us of that by Ellenberger and Baum, of Dresden, but in lucidity and detail it even surpasses their efforts. It will be of great service to the veterinary profession and to those interested in comparative anatomy.

DIE DIATHERMIE.

Third edition. By Dr. JOSEF KOWARSCHIK, Primararzt und Vorstand des Institutes für Physikalische Therapie im Kaiser-Jubiläums-Spital der Stadt Wien. Berlin: Julius Springer. 1921. Pp. 166. M.228.

THIS short exposition is divided into six parts, of which the author devotes two to a discourse on the physics of high-frequency currents and the construction of various models of apparatus designed for the production of diathermy. In the third part the methods of applying diathermy to the body are described. The troubles that are likely to arise during the working of the apparatus are mentioned, and instructions are given regarding their rectification by the operator. The physiological action and effects of diathermy are considered in the fourth part. In the fifth, which is the longest, occupying 46 pages, the medical uses of diathermy are discussed. The different systems of the body are considered in order and also the maladies for which diathermy has been found effective, with clear instructions as to methods of application. The final part deals with surgical diathermy.

The book is a concise monograph, but rather too brief on the surgical uses of diathermy. The author lays great stress on the importance of dosage and points out that better effects are not necessarily produced by stronger currents. He shows that the deep-lying

organs of the chest and abdomen are more heated by relatively weak than by strong currents. This apparent paradox has been proved by experiments on animals, of which some interesting results are quoted. Pathogenic organisms were injected into the joints of animals and diathermy was applied to some of the joints while others were untreated and used as controls. The fluid from joints into which gonococci or cholera vibrios had been injected was found to be sterile after the joints had been exposed for half an hour to diathermy.

The book is well printed and illustrated and can be recommended. It includes a very full list of references.

INFECTIONS OF THE HAND.

Fourth edition. By ALLEN B. KANAVEL, M.D., Assistant Professor of Surgery, Northwestern Medical School. Philadelphia and New York: Lea and Febiger. 1921. Pp. 500. $5.50.

THE fourth edition of this volume differs but slightly from the third, though the text has been supplemented by additional notes on gas bacillus and streptococcal infections. One quite new chapter has been inserted, a most valuable one dealing with the restoration of function in infected hands. There is no book in the English language to compare with this text-book; it is a masterpiece as an example of detailed and inspired research. Infection in the hand is fraught with such disastrous possibilities, not only to function but even to life, that this volume should be in the hands of every practitioner who proposes to open even the simplest infective lesion in the fingers or palm.

CHLOROFORM ANÆSTHESIA.

By A. GOODMAN LEVY, M.D., M.R.C.P. London: John Bale, Sons and Danielsson, Ltd. 1922. Pp. 159. 7*s.* 6*d.*

THIS well-written little book owes its chief value to a clear exposition of the author's views on the rationale of death under chloroform. In fact, it has more a physiological than a clinical interest, for clinical details are obviously and no doubt intentionally limited. Nevertheless the practical administrator can only benefit by a discussion of the physiological processes involved in the conditions which he produces. Moreover, Dr. Levy briefly describes the various clinical methods of using the drug and deals in some detail with his own version of the drop method whereby vapour percentage may be regulated and continuity of administration achieved. Dr. Levy's main contention is that clinical teaching with regard to chloroform danger has been wrong hitherto because it has centred on too great a strength of vapour as being the main source of danger. Fatal danger is, in Dr. Levy's view, entirely dependent on the occurrence of ventricular fibrillation, and this can only be set up during light anæsthesia. It is therefore due when it arises to too little, not to too much chloroform. That sudden heart failure does not occur clinically during full anæsthesia under chloroform we believe to be too sweeping a statement. It is true, however, that the characteristic sudden death under chloroform usually occurs during light anæsthesia, either early in administration or after its cessation when recovery is expected.

In his critical analysis of reported deaths under chloroform Dr. Levy could find no single instance where over-dosage was obviously the cause of death. The problem arises of how to avoid the danger. Neither in this book nor elsewhere can we discover how to prevent a patient who is anæsthetised throughout with chloroform from passing through the light stage of anæsthesia both in induction and in recovery during which the danger of fibrillation arises. It is not within the province of this book for the author to point out reasons for avoiding chloroform anæsthesia, which is a sound way of meeting the difficulty. He has contributed a thoughtful and interesting manual to the literature of anæsthesia.

JOURNALS.

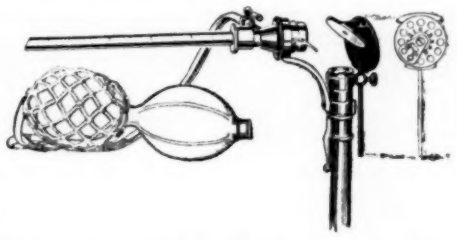
JOURNAL OF LARYNGOLOGY AND OTOLOGY. July and August, 1922.—The July number opens with an editorial review by Dr. Logan Turner on the position of laryngology and otology in the medical curriculum of the various examining and teaching bodies in Great Britain, which marks the changes from 40 years ago, when no recognition was afforded to the study of these subjects, to the present time, when instruction and examination have become compulsory in some of our universities.—Sir StClair Thomson supplies, in view of the International Congress of Otology in Paris, a short historical summary of the progress of oto-laryngology in France, and a fuller description of its present position, together with a very useful list of the leading special clinics at the hospitals in Paris.—Dr. Irwin Moore continues his lengthy but valuable survey of the so-called prolapse of the laryngeal ventricle. In the August number he concludes his study, and gives excellent descriptions of known cases of eversion of the sacculus, some good illustrations, and an exhaustive bibliography.—Dr. Dan McKenzie, in the same issue, puts forward a theory that in some cases, at any rate, of epidemic cerebro-spinal fever the infection may reach the meninges by the Eustachian tube and tympanum, and pleads for a more thorough and regular examination of these cases by otologists.—Dr. Douglas Guthrie records a case of otitic temporo-sphenoidal abscess in a boy, aged 6, who recovered after operation; and Dr. Richard Francis, of Sydney, reports the removal of a large rhinolith from the nose of a man aged 62.

PHILIPPINE JOURNAL OF SCIENCE.—The April issue (the most recent which has reached us) contains a description of a large number of new and noteworthy Philippine plants, including 106 new species. The paper is the seventeenth of a series, and is contributed by Elmer D. Merill, M.S., director and botanist of the Bureau of Science at Manila. Each plant dealt with is described both in Latin and in English, notes as to habitat being added. No information as to economic value is given.

New Inventions.

AN OPHTHALMO-URETHRA-SCOPE.

FURTHER improvements have from time to time been effected in a pocket instrument by which a novice can see with ease the vocal cords, drum of the ear, transillumination of the antrum and fundus oculi. I now wish to describe the latest attachment which I have suggested (see illustration). To a small torch con-



taining an adaptor and flex, which gives illumination to a 3–5 (or greater power) bulb light, run from a small pocket battery or from the house current by means of a resistance, is attached an ophthalmoscope, with numerous lenses, which is used, as in the examination of the eye, for focussing the object under observation. By a simple arrangement the pneumatic head of a urethroscope is fixed opposite the ophthalmoscope, made airtight by means of a glass window, so that

the urethra can be inflated through a stopcock by means of a rubber bellows if desired. The endoscopic tube is introduced into the urethra on its pilot rod in the usual way and the pilot is then withdrawn. The head of the urethroscope is now attached to the handle of the torch opposite the ophthalmoscope and is then connected with the endoscopic tube (in situ), so that the light from the torch, reflected by the ophthalmoscopic mirror, is thrown through the tube and by focussing, as in the usual method of using a Morton ophthalmoscope, a clear and perfect view of the urethra under air pressure can be obtained. The endoscopic tubes are marked in inches, so that when the lesion is localised one can note the distance from the meatus and any selected site can be touched with a caustic or a lacunar abscess incised by means of a probe or lancet. The complete intrument forms an electrically lighted ophthalmoscope and urethroscope combined, which can be carried in the pocket.

The instrument has been made for me by the Aurorascope Co., Ltd., Fulwood House, Fulwood-place, Holborn, London, W.C.

Berkeley-street, W.1 HENRY DUTCH, M.R.C.S., &c.

Reports and Analytical Records.

"SOLOID" SUGAR MEDIA.

(BURROUGHS WELLCOME AND CO., SNOW HILL BUILDINGS, LONDON, E.C.)

WE have received six examples of "Soloid" brand sugar media for making litmus broth, containing one or other of the sugars: lactose, maltose, saccharose, glucose, dulcite, or mannite. These products are convenient in routine laboratory work, especially where the investigator is working by himself, or when a few tubes of "sugar" media are hurriedly needed and facilities for sterile working are not readily available. Each variety is put up in tubes containing six products, and to prepare a culture-tube all that is required is a clean test-tube, a plug of absorbent cotton, water, and one "Soloid" product. The required medium being selected is put into the test-tube, and the indicated quantity of water (preferably distilled) is added; the tube is plugged with sterilised wool, and after standing for 10 minutes is gently shaken, and immersed in boiling water to a level above that of the contained water. Boiling for 30 minutes then kills all organisms except resistant spores, and makes a culture-tube sufficient for purposes of ordinary diagnosis.

FELAMINE; IPECOPAN; FEMERGIN.

(THE SANDOZ CHEMICAL CO., LTD., CANAL-ROAD, BRADFORD. Agents: JOHN BELL AND CROYDEN, LIMITED.)

The therapeutic uses of these three new pharmaceutical products have a large range.

Felamine "Sandoz."—This product is designed for the treatment of cholelithiasis. A 1 per cent. solution can disinfect bile containing *Bacillus coli*. The chemical action is complicated, but appears to be capable of scientific explanation. It is a combination of hexa-methylene-tetramine with the pure active principle of ox-gall. Each tablet contains 0·3 g. of the active substance.

Ipecopan "Sandoz."—This remedy, in the three forms in which it is supplied, employs the active principle of ipecacuanha in its well-known action as an expectorant. The origin of the new drug has been an investigation of the active principles of the constituents of our old friend, Dover's powder, Ipecopan being a scientific combination of emetine with pure alkaloids of opium having a constant morphine content. The remedy is put on the market in the form of tablets, aqueous solution, and in syrup of malt, the quantity of morphia having been considerably reduced compared with the opium content of Dover's powder. The suggested dosage is small, and the preparations are put up in cases bearing strict injunctions that a doctor's prescription must be observed.

Femergin "Sandoz."—This is a commercial name for the tartaric salt of ergotamine, the principal alkaloid of ergot. Under the name of "Gynergen" a good report has been received from the gynæcological department of the cantonal hospital in St. Gallen. The classic results of the administration of ergot were obtained with safety and regularity, the occasional occurrence of nausea and vomiting being the only draw-back noted, when it would seem that the administration was at fault. The drug is packed in bottles of 15 tablets, each containing 0·001 g. ergotamine tartrate; in bottles containing 15 c.cm. of solution of 0·1 per cent. ergotamine tartrate; and in boxes of 3, 6, and 12 ampoules, each containing 1·1 c.cm. of sterile solution of ergotamine tartrate.

"GENCYDO" TREATMENT OF HAY FEVER.

(INTERNATIONAL LABORATORIES COMPANY, LTD., ARLESHEIM. Agents: ANGLO-FRENCH DRUG COMPANY.)

We have received specimens of "Gencydo," a remedy for hay fever, which appears to have earned good opinions from medical men and laymen both in this country and on the continent; particularly a number of cases have been treated with success at the Clinical and Therapeutic Institute in Arlesheim. The remedy is made up in accordance with three formulæ:—

Ampoules.—Gentiopikrin, 0·01; extract sem. cydon., 0·01.

Liquid.—Gentiopikrin, 0·02; glycerine, 40·0; extract sem. cydon., 0·05; aqua destil., 40·0; alcohol, 20·0.

Ointment.—Liquid (without alcohol), 20 parts; vaseline, 40 parts; adeps lanæ, 40 parts.

The remedy contains, therefore, the principal active ingredients of gentian root, together with an extract of quince seeds, and the claim of the manufacturers that no harmful after-effects will be occasioned by its use is endorsed. The therapeutic idea behind the preparation is to relieve the catarrh which is a general accompaniment of hay fever, by the exhibition of fresh plant extracts rich in calcium. It is directed that in a marked case of catarrh the liquid should be painted inside the nose once or twice daily. Where conjunctivitis is present the lower eyelid is treated in the same way. The ointment is to be used similarly, either alternately with the liquid or in preference to the liquid if there is local irritation. Medical testimonials have been received to the effect that the combined liquid and ointment treatment is often sufficient to overcome preliminary catarrhal symptoms. Direction for the use of the ampoules is that 1 c.cm. should be injected every other day till the symptoms have disappeared. In severe cases the injection may be employed daily.

"TYNE BRAND" HERRINGS IN TOMATO SAUCE.

(THE SHIELDS PRESERVING WORKS, NORTH SHIELDS.)

The contents of a tin weighed 15·5 oz., which were made up of five herrings 12·25 oz., oil 0·85 oz., and tomato 2·4 oz. The oil had a specific gravity of 0·917 at 15·5° C. The packers claim that the herrings are cooked and packed within 24 hours of being caught. The fish are of average size, the heads, tails, and intestines having been removed. Taking the caloric value of herrings, oil, and tomato at 660, 4077, and 105 per lb. respectively, the caloric value of the mixture works out at 761. The food value of the prepared herrings is thus slightly higher than that of eggs and beef. Herrings are among the most nutritious of foods, and being cheap are especially valuable as a source of animal protein. They fall into the small group of fish rich in fat, such as eels, salmon, and turbot. The average percentage composition of the edible portion is, water 72·5, protein 19·5, and fat 7·1.

THE LANCET.

LONDON: SATURDAY, SEPT. 30, 1922.

Medicine in the R.A.F.

IN no branch of modern progress is the confidence of safety so much required as in aeronautics. Insurance companies demand airworthiness of the craft; the airworthiness of the pilot is of equal importance, for the chief risks in flying are still due to the human element in it. Those who practise flying must possess certain physiological qualifications before they can adapt themselves to the conditions which flying imposes, with its varying and often lofty altitudes, swift motion, and changes of position. The pilot must possess an eye for judging pace and distance; to land and take off well he needs accuracy of vision, both perceptive and stereoscopic. Above all, he must possess the spirit for flying, the psychological stability that reacts normally to the stresses of danger. Early in the war it was found necessary to fix standards for selection, and as the result of research and experiment certain tests were devised which have been described in these columns. The application of physical efficiency tests is still to some extent empirical, but in practice they have proved of substantial value. Broadly speaking, experience tends to show that the chief qualifications required for the airman from the medical point of view are the following:—

(1) Good vital capacity, with a properly acting respiratory pump. The one is of little use without the other; a large chest is inefficient if coupled with flabby abdominal muscles and feeble descending diaphragm. A respiratory pump which does not secure the quick return of venous blood to the heart reacts on the cardio-vascular system.

(2) Well-adjusted cardio-motor system, able to tolerate lack of oxygen, diminished pressure, fatigue, and emotion, without undue disturbance of the relation of systolic to diastolic pressure, and without undue acceleration or irregularity of the pulse.

(3) Stable nervous system, with sufficiently quick reaction time to afferent stimuli, expressed in muscularly coördinated effort.

(4) Good function of eye and ear. Visual acuity, fusion sense, binocular vision, and coördination of both sets of extra-ocular muscles. Intact vestibular function, healthy Eustachian tubes, and upper air passages.

(5) Suitable mental "make-up." Much can be gathered from the way in which questions are grasped and answered, and in which directions are obeyed. Favourite pursuits and hobbies, reasons for wishing to fly, give valuable indications of temperament. The history of athletics is valuable in affording information, for games may be regarded as psycho-motor reactions carried out under congenial circumstances.

Careful as it is necessary to be in choosing candidates for civil aviation, yet more care is needed in selecting men for the Royal Air Force. Combatant service means flying at the highest possible altitudes, and the practice of various evolutions known as "aerobatics" which require the topmost degree of mental alertness. In early days, before the tests now in use had reached the stage of tried utility, it was a common thing to hear of aeronauts fainting in the air, becoming giddy, or turning sick and vomiting, so much so that flying was said to be producing new diseases. Flying has produced no new diseases; it has only brought out in men not fitted to stand it their mal-adaptations to altitude or rotatory motion. Untoward occurrences are now rare, a fact which may fairly be set down to improved selection of candidates based upon standards of physical efficiency ascertained by examination of specially fit pilots during the war. There is yet much research to be done before the physical efficiency tests become standardised and their significance proved by actual figures. The selection of the pilot is, however, but the first stage; after he has been passed in fit he has to be kept at concert pitch by continuous attention of the medical officers, and this supervision to be efficient implies special training on the part of the doctors themselves. This consideration it was which was then and still is the justification for a special medical branch of the Air Force. The standard of fitness for flying efficiency being so high, it is the more easily lowered by factors adverse to perfect health. The effects of tropical climate and disease, lack of exercise, late hours and alcohol, financial and domestic worry or other psychic troubles, are factors potent to cause a breakdown if not detected in time. In these circumstances the physical tests employed for entry are of equal value to detect signs of deterioration. Put into requisition whenever a flying officer has been on the sick list before he is again allowed in the air, they are also used as a routine measure in an annual survey and assessment of the Air Force. As in other branches of medicine the value of this preventive policy cannot be estimated. It is obvious, however, that the forestalling of danger can only be efficient when there is complete confidence in the medical officer on the part of the pilot. A medical officer who is entitled to wear wings is at a great advantage in eliciting from a pilot the fact that he feels stale. Such mental confidence is not to be attained easily between a pilot and an outside doctor. Nothing is more depressing to a flying man than to realise that the doctor inquiring into his case, describe it how he will, cannot grasp the points he is trying to make. Lack of this knowledge and sympathy was a fundamental weakness of the earlier medical boards on flying officers. A headache may be merely due to indigestion or it may be the first sign of oncoming flying stress; yet in the early days of flying a pilot complaining only of headache would have obtained scant sympathy from a board. It takes a number of men on the ground to keep a machine in the air, and their efficiency is also a factor in maintaining safety in the air. They are mostly skilled mechanics at a particular trade, whose life is spent largely in workshops subject to special trade risks. The coming of the non-commissioned pilot presents a problem of its own in selection. Except for his being housed in barracks, it may be said that the life of the airman and the problems of his physical training and well-being differ widely from those of the soldier.

Medicine in the Air Force has therefore its special interest in the problems connected with keeping the flying personnel in a state of full efficiency, and while much has been done to improve safety in the air by eliminating the unfit and keeping the fit up to their work, there is still field for research. Medicine has also its ordinary interests in sick quarters on the stations, and in the special hospitals at home and overseas, the hospitals being, it is true, limited to places where Air Force personnel are concentrated in large numbers or where no naval or military hospital is near. The sanitation of camps and barracks, the training of medical personnel for duties in peace and war, and the like, can only be performed by medical officers who have an intimate knowledge of the organisation and regulations of the Force itself. The expansion of the Air Force overseas has thrown open to its doctors opportunities for investigation in tropical pathology and epidemiology; recent researches on sand-fly fever in Malta, for example

have led to important results which should soon be available for publication. The need of the medical service at the present moment is for young doctors capable of carrying out all this special work; the character and interest of the work should ensure their being forthcoming.

The Mechanism of the Cochlea.

HITHERTO current physiological teaching has provided only a hazy conception of the mechanism for hearing in the cochlea. HELMHOLTZ put forward the view that this organ contained a series of resonators, which were differentiated like a set of piano strings, so that each string vibrated only in response to one particular note. It will be remembered that the cochlea forms a spiral, which when unwound consists of two chambers placed one above the other and separated by the basilar membrane. At one end (the base) of the cochlea, in the wall of the upper chamber, is the window which is set in vibration by the middle ear, while in the wall of the lower chamber is a similar window whose function is to prevent the pressure from changing inside the cochlea when the upper window moves. Both chambers contain fluid, and at the other end (the apex) of the cochlea the chambers unite, for the basilar membrane ceases just short of the apex. The suggestion that the fibres of the basilar membrane can act as a resonating system has been current since it was pointed out that their length (measured across the canal) varied continuously from the base to the apex. Now the fibres of a resonating system must obey the laws which govern vibrating strings, so that "n," the number of vibrations per sec. $= \frac{1}{2l}\sqrt{\frac{t}{m}}$, where "l" is the length of the fibre, "t" is the tension of the fibre, and "m" is the mass per unit length. Dr. ALBERT GRAY showed, in 1900, that the tension of the fibres of the basilar membrane also varied from the base to the apex, for while the spiral ligament which attached the membrane to the outer wall of the cochlea was very dense near the base, it was on the contrary very slender near the apex. We therefore know that the fibres of the basilar membrane are differentiated for tension and length, so that the short fibres near the base are under high tension and the long ones near the apex are under low tension. To complete the requirements of the formula for vibrating strings it is only necessary to discover a system by which the fibres are differentiated for mass, which differentiation must, as the formula demands, be applied so that the loading on the fibres is small near the base, but large near the apex. A great difficulty in supposing that the basilar membrane represents a system of resonating strings is the fact that it is immersed in fluid It is precisely this point which Mr. GEORGE WILKINSON conceives to be, not a difficulty, but the key of the whole problem. At a meeting of the Section of Otology of the Royal Society of Medicine, reported in THE LANCET of June 10th last, Mr. WILKINSON outlined a new theory of the mechanism of the cochlea which was well received by his professional colleagues. Recently he has developed his theme before the larger audience afforded by the annual gathering of the British Association for the Advancement of Science, and the importance of his work has been widely appreciated. He suggests that the differentiation of the fibres as to mass, or the "loading" of the fibres, is brought about by the fluid in the canals. When the fibres at any point of the membrane vibrate in response to an impulse from the middle ear, they will be loaded by the weight of a column of fluid proportional to the distance of the vibrating point from the fenestra rotunda, which is the window in the base of the cochlea. The column of fluid between the window and the vibrating point will be least in the case of a point on the membrane near the base of the cochlea, and greatest in the case of a point near the apex.

So much for Mr. WILKINSON'S theoretical conception. He has provided a convincing proof of his views in the shape of two very ingenious models. The first is a brass box divided horizontally into two like the cochlea unwound from its spiral. The partition which represents the basilar membrane consists of a series of parallel wires of phosphor-bronze soldered firmly in position and covered with formalised gelatin. On the basilar membrane is scattered blue enamel powder. There is a fenestra rotunda and ovalis at one end of the box, respectively above and below the basilar membrane, the windows being formed in each case by a rubber disc. The box is filled with water and is completely closed. In his first model Mr. WILKINSON has kept all his phosphor-bronze wires at the same tension and of the same length. Yet he finds, when he applies a vibrating tuning-fork to the rubber membrane, or fenestra rotunda, that the powder on the basilar membrane takes up a definite position which varies with tuning-forks of different rates of vibration. Thus a 200 D.V. fork produces a localised resonant response at a distance of 3·3 cm. from the proximal end of the scale, while a 400 D.V. fork produces such a response at a distance of 0·9 cm. If one makes use of the formula for vibrating strings and supposes that the differentiation in resonance is due to the different loading of the wires by the fluid according to the above hypothesis, then the point of resonance to the lower tone should be 4 times the distance from the windows compared with that for the upper note. Actually we see that it is not 4 times, but is $\frac{3·3}{0·9} = 3·6$ times—a very striking agreement. Here, then, is ocular demonstration of Mr. WILKINSON'S contention that a system of transverse fibres immersed in a fluid, as it is in the cochlea, is already, by reason of the position of the fenestræ, differentiated for resonance in regard to the effective mass of the fibres. In his second model, which is larger, he has carried out a differentiation of his phosphor-bronze wires in respect of tension and length. The differentiation of tension is effected by attaching weights of different sizes to the ends of the individual fibres; while lighter weights are attached to the longer fibres near the "apex," the heavier weights are attached to the shorter fibres near the base. In this way he has attained a model which gives a localised resonant response over a range exceeding four octaves.

There is no doubt that Mr. WILKINSON has made a considerable contribution to our knowledge of the mechanism of hearing; he has presented the first clear conception of the details of that mechanism.

Interpretation of Figures.

IN the May *Bulletin* of the New York Department of Health, the veteran surgeon, Prof. W. W. KEEN, of Philadelphia, calls attention to some of the curious features of anti-vivisection literature. Statements, repudiated and shown to be false, tend to recur from year to year, so that even the long-suffering Dr. WILLIAM J. MAYO once cried out in his wrath, "The truth is not in these people." It seems, Prof. KEEN finds, impossible for them to quote correctly, and their printed statements are apt to lack references other than the year of publication, and to be undated or even

unpaged. Prof. KEEN himself took the trouble to verify the specific charges against 17 doctors named in a leaflet issued by the New York Anti-Vivisection Society under the arresting title "Vivisectors Clamor for Human Beings to Vivisect," and by reference to those of the authors who were still living he was able without difficulty to refute the charges. Dr. ALEXIS CARREL, the first person quoted in the leaflet, replied, "The only experiments I performed on human beings *were on myself* during the war." In the current number of the *Abolitionist*, the organ of the British Union for the Abolition of Vivisection, Dr. WALTER R. HADWEN has set out under subject headings the figures which he has collected in support of the thesis that "In every instance where reliance has been placed upon vivisectional methods the death-rate has increased, but wherever these methods have been ignored and a saner course has been pursued, the death-rate has declined." We shall do Dr. HADWEN no injustice in suggesting that his convictions are stronger than his figures, and we should like to see this issue of the *Abolitionist*, in which, so to say, all the antivivisection cards are laid at once on the table, placed in the hands of senior medical students and younger qualified men and women. To draw up medical statistics correctly and to draw correct deductions from them involve a high order of intellectual achievement, but we think that every member of the medical profession should make a point of seeing any fallacies which there may be in Dr. HADWEN's interpretation of the Registrar-General's figures.

In a prefatory note Dr. HADWEN defends himself for his use of death-rates in terms of the total population rather than case-mortality figures, because that is the Registrar-General's own method. He ought to know that the Registrar-General deals with death certificates supplied by medical practitioners, and that for accurate figures comparing cases and deaths reference must be made to hospital and other local figures where such comparisons are readily available. But even then Dr. HADWEN would remain unsatisfied; for the notifications of diphtheria are swollen by bacteriological diagnoses, whereby case-mortality is lowered to an extent which upsets a comparison of pre-antitoxin and post-antitoxin conditions. One set of diphtheria figures is, however, free from this possible source of error—namely, cases in which owing to failure to administer antitoxin at an earlier stage tracheotomy becomes necessary. A patient needing this operation is in a desperate condition; more than half of such patients in times past subsequently succumbed, while now the fatality is greatly reduced. This fact deserves unbiased attention. Anthrax is made the subject of comment. In this country it caused an average of eight deaths each year before Sclavo's serum was introduced in 1899, while in 1916–20 the average was 19. Incidentally this is a good example of the misleading nature of averages. Reference to the Registrar-General's tables will show that the number of deaths from anthrax varies greatly from year to year. In 1912 only nine deaths were due to it, which, allowing for increase of population, is as low as in the average years prior to 1899 as quoted by Dr. HADWEN. A disease may be increasing and yet the control over it when exercised in any given case may have greatly improved. The seeker after truth recalls Dr. F. J. H. COUTTS's report to the Local Government Board on anthrax, showing how foreign shaving brushes imported during and since the war were infected with spores and caused many cases of anthrax on shaving surfaces. This inadvertence runs through other sections of Dr. HADWEN'S comments. Diphtheria is a disease which, from causes as yet unknown, is liable to pandemic waves, during which the greater prevalence and mortality in the general population may be, and in hospital experience has been, associated with a much lower fatality among serious cases—not adequate, however, to out-balance the greater number of deaths due to widely increased prevalence. The only available plan for separating these two factors, in part at least, is to compare for given ages patients treated with and without antitoxin, differentiating cases according to the stage of disease at which antitoxin was given. The present position in regard to scarlet fever is regarded by Dr. HADWEN as a triumph of sanitation, unspoilt by any vaccine or serum treatment. We have no doubt that improved domestic hygiene, increased precautionary measures, and hospital treatment have done much to lower the total death-rate from scarlet fever. But even enthusiastic sanitary reformers do not claim that this covers the entire ground. Scarlet fever is liable, apart from methods of treatment, to great variations in infectivity and in virulence, and we may now be in a period of minimum virulence from which it is possible there will be a rude awakening. Anyone having doubts on this point should read the old Dublin text-books of medicine, describing past cycles of virulence of scarlet fever irrespective of treatment, whether by phlebotomy or port wine. Dr. HADWEN prides himself on the fact that measles, which, like scarlet fever, is a disease for which no serum or vaccine has yet been discovered, has, as he prophesied a few years ago, shown a lowered mortality. It is true that the average death-rate for 1911–20 was 275, as compared with 414 in 1891–1900. It would be strange if the vast amount of additional care now bestowed on this so-called "minor" infectious disease had not produced some effect on the mortality statistics. Much of this good has been associated with improved nasal and oral asepsis, diminishing the risk of pulmonary complications. Under the heading of syphilis Dr. HADWEN compares statistics of the war period with those of earlier years; and because the death-rate of 55 per million in 1916–20 compares unfavourably with that of 54 in 1911–15 and of 48 in 1906–10, he concludes that salvarsan is discredited as a remedy. Here, again, to the unbiased investigator it must be evident that even if the death-rate from syphilis had been doubled in the war period, this would be quite consistent with the belief that but for salvarsan it would have been higher still.

On the old and vexed question of the relation of cow-pox to small-pox it is perhaps hardly fair to expect Dr. HADWEN to shed new light. But we welcome his suggestion that it would be advisable in all deaths from chicken-pox to state the vaccinal condition of the deceased. This information, which is in the possession of the medical officer of health in whose area such a death has occurred, must have been one element in the diagnosis of chicken-pox. As is now well known, chicken-pox in a small proportion of cases assumes a gangrenous character with a fatal result. Stress is laid by Dr. HADWEN on the fact that in the year 1920 19 deaths were ascribed to results of vaccination, as compared with 15 deaths among the unvaccinated from small-pox in the same year, and we are asked which disease is preferable, cow-pox or small-pox. Dr. HADWEN has chosen for his comparison a post-bellum year in which the avoidable accidents associated with vaccination were more numerous than in any preceding year since 1906, and he refrains from carrying his comparison back to 1902, in which year, it may be observed, the total deaths from small-pox among unvaccinated were 791, and among persons whose condition as to vaccination

was doubtful 852, while the deaths ascribed to cow-pox and other effects of vaccination were 22. Here we may be grateful for quite a good instance of the need for precautions in the use of statistics. Incomparable items must not be compared; when comparing items which appear comparable, it is necessary to ascertain whether other factors affecting the result, besides the one under comparison, have varied substantially during the same period. There are such phenomena as epidemic waves; there is such a thing as an "epidemic constitution" determining, though we do not know how, the intermittent prevalence to an abnormal extent of small-pox, diphtheria, or scarlet fever. In estimating the value of any therapeutic or prophylactic measure we must know the proportion of attacked to killed in comparable groups, and the number not attacked to the number attacked in similar comparable groups. The habit of mind which appreciates these things is one of the objects of a liberal medical education. So much is desirable in order to interpret rightly the work of others and not to be misled by faulty interpretation. The Registrar-General has set an example by warning us not to read more into his figures than they will carry. They can tell no more than is embodied in the certifying practitioners' returns, and as these become more accurate his deductions from them will grow in value.

THE APERIENT WATERS OF ESSEX.

THE county of Essex lies for the most part in a basin of London clay, the strata of which in some places are almost friable from the presence of calcium sulphate. Sulphated water is abundant all over the county, and it is a frequent experience for the county authority to receive for analysis a sample of water from a newly sunk well and to issue a report in the form: "Useless for drinking purposes; may be useful as a mild aperient." The water from a well at Vange, to the properties of which some publicity has been given, resembles closely that of the neighbouring well at Hockley, described ten years ago by Mr. Miller Christy, F.L.S., and Miss May Thresh in a History of the Mineral Waters of Essex, contributed to the Essex Field Club Memoirs. The well at Tilbury, which is still nearer, was at one time famous, but has passed completely into oblivion. There are elsewhere in England numerous weak sulphated springs now disused, of which Epsom, Beulah Spa near Norwood, and Purton near Swindon at one time possessed considerable reputation. Nowhere in this country do we possess the concentrated sulphated springs, such as that of Marienbad, which contains nearly 5 per cent. of Na_2SO_4, or that of Robinat in Spain, which contains 10 to 12 per cent. These strong waters are not drunk at the source, but are bottled for distribution as medicinal purgative doses. The Leamington sulphated water contains 1·2 per cent. of Na_2SO_4 and 0·9 per cent. of $MgSO_4$; the Cheltenham spring has nearly double the sodium content and one-third of the magnesium. The reputation of alkaline aperient waters in disorders of metabolism is largely based upon the assertion of Seegen that ingestion of small doses of sulphate of soda diminished the disintegration of nitrogenous substances while it increased the combustion of fat; although his methods came under criticism, his conclusions received support from later observers such as Jacques Mayer and Loewy. Dr. Matthew Hay attributed the action of saline purgatives to a true increased secretion in the intestine, due not to osmosis but to the irritant and specific properties of the salt and also probably to its bitterness. Whatever the practical value of the waters, the popularity of such alkaline purgative spas has been ephemeral in this country. A pump-room was built at the Hockley Spa in 1842, but the enterprise was not a success, for in 1871 the hotel had become a beer-shop and the spa room was in use as a chapel.

Annotations.

"Ne quid nimis."

THE STUDENT AT THE SCHOOL CLINIC.

IN reviewing some reports of school medical officers not long ago we commented on the fact that no advantage appeared to be taken by the large university towns of the enormous fields opened for instruction of students by the medical inspection and treatment of school-children. The dental department of Liverpool University, discovering with alarm that the appointment of school dentists on a large scale would deprive the University of an extensive portion of its clinical material, has now come to an arrangement with the Education Committee, whereby the University's final-year dental students have to put in at least three months' work at a school clinic under the supervision of the school dentist and the dental teaching staff of the University. The arrangement carries advantages for both the University and the local authority, and the child does not suffer, as the work is supervised as strictly as at the dental hospital, where until now the children have been treated. It is to be hoped that this coöperation between the teaching staff of a university and the staff of the school medical services will be extended to cover other grounds. The study of the normal and abnormal child together makes for a much more thoroughly considered and balanced judgment than the continuous study of the abnormal, and this coöperation would do away with the lack of sympathy that too often exists between the hospitals and the school doctor. Apart from the field of research open to him, the student would learn much that would be useful to him afterwards, if at first only how to diagnose ringworm. Every school doctor has come across cases of definite ringworm dragged by weary mothers from one doctor or institution to another and turned away from each with the assurance that the case is not one of ringworm. Many authorities have even found that the only way to reduce the numbers of ringworm cases is to accept only the school doctor's certificate of cure. Dr. E. W. Hope discovered that by this proceeding he was able to reduce the number of these cases in Liverpool from 1400 in 1911 to 950 in 1912. The figure now is between five and six hundred. Certain sociological aspects of medicine would also be brought prominently before the student who attended school clinics as part of his training in pædiatrics.

A special investigation into the cause of school absence, for example, was recently undertaken in Liverpool, the results corresponding closely enough to those found elsewhere. Five-sixths of the total absences were due to medical reasons. The period chosen for investigation was the first quarter of the year, when school attendance is usually lowest. Four schools in fairly good neighbourhoods were compared with four in a poorer district. Respiratory troubles accounted for the largest number of absences, next came infectious disease, and then high on the list came skin affection. The majority of diseases ran almost parallel in both districts with the exception of eye affections, which are four times more common in the poorer schools, and skin diseases which are twice as common. Respiratory troubles as well as general debility and anæmia in the better-class schools are twice as common as in the poorer, indicating probably a greater amount of precaution or coddling on the part of the better-class mother. Girls, too, show more tendency to be kept at home than boys, and infants, as would be expected, most of all. The large amount of eye affection in the poorer schools is significant, and is attributed by Dr. Hope to the poor nutrition and the want of cleanliness of the children, most of the trouble being due to blepharitis. It was found, too, that 36 per cent. of the children in this city were not wearing their glasses. This means that much more than half the cases of hypertropia

do not use the glasses prescribed, as children make a special effort to have their glasses at the doctor's visit. Over 100 out of close on five times that number of children suffering from pulmonary tuberculosis were in institutions, where classes have been arranged for them. The resident doctor emphasises the therapeutic value of such mental stimulus in this disease. During the year 43,469 children under the code group were examined and 7109 referred for treatment. During the summer holidays games for children remaining in the city were organised, and paid supervisors took charge in five of the most frequented parks. Storage huts for apparatus were provided in each of them. Voluntary help came forward in the shape of parents, university students, and onlookers, and in the five parks there was an average daily attendance of 996 boys and girls in the mornings and 3334 in the afternoons.

Those who draw up the curriculum may contend that it is impossible to demand more time for pædiatrics or sociological medicine from the undergraduate, but the substitution of certain school clinic attendances for those of the out-patient department may prove a valuable means of interesting him in the wider aspects of preventive medicine.

A CLINICAL THERMOMETER IMPACTED IN THE DUODENUM.

Dr. G. A. Preis, of Zurich, reports[1] a case of impaction of a clinical thermometer in the duodenum. The patient, a girl of 21 years, had previously suffered with pelvic inflammation and arthritis of the knee of gonococcal origin, and owing to mental excitement and suicidal tendencies she had on several occasions been under observation in a mental institution. In June, 1920, she was admitted into the surgical clinic with the diagnosis of acute appendicitis, complaining of right-sided abdominal pain and frequent vomiting of several days' duration. She complained also of pain in the right renal region, but the physical signs and examination of the urine excluded pyelitis. The appendix was removed on the same day, and presented small punctiform hæmorrhages in an otherwise normal mucosa. There was no peritoneal exudate, and the pelvic organs were normal on palpation. The wound healed by first intention, but the pain persisted and the temperature remained slightly above the normal. The pain increased in severity, and later vomiting started again. About three weeks after admission the pain was localised to the epigastrium, and slight tenderness to the right of the middle line was found, vomiting became more frequent, and the patient began to look ill. She was now questioned more thoroughly as to the onset of the disease, and it transpired that ten weeks previously, while in an asylum after an attempt at suicide, she had swallowed a clinical thermometer, and that this had never been recovered. On this story being obtained X ray examination was undertaken. A screen examination revealed a fine straight shadow simulating a needle, and on further accommodation a clear zone could be made out surrounding it, and the form of a thermometer could be clearly demonstrated. It lay on the right transverse processes reaching from the twelfth rib above to the level of the fifth lumbar vertebra below. A barium meal confirmed the screen appearances. The first part of the duodenum was tent-shaped over the top of the thermometer, while the second part was thinned out and lengthened. A perforation was excluded by the smooth and rapid passage of the barium along the intestine. The same day operation was undertaken. The peritoneum was divided over the duodenum, and the thermometer was clearly palpable in the position revealed by the X rays. No inflammatory changes in the peritoneum or periduodenal tissues were present. The duodenum was opened and the thermometer extracted entire. The duodenum was closed in three layers and the abdominal wall sutured. Recovery was uneventful, and the patient was discharged free of symptoms. The patient stated that the nurse had shaken the thermometer down and placed it in the axilla, and that shortly afterwards she had removed it and swallowed it. On removal it registered 41·5° C., and this reading is interpreted by Dr. Preis as a record of the highest temperature of the interior of the duodenum. He refers to the experiments of Ito, who showed that in dogs the duodenal temperature was only 0·7° C. higher than the rectal, and that a rise to 41·5° C. was impossible. The only explanation acceptable to Dr. Preis was that the phenomenon was due to the ingestion of hot fluids, which may leave the stomach very rapidly. It does not seem to have occurred to him that a patient sufficiently unstable to remove a clinical thermometer from her axilla and swallow it might be familiar with the many well-known devices for the artificial production of a high reading.

[1] Medizinische Klinik, August 27th, 1922.

THE TSETSE-FLY.

THE tsetse-fly, or *Glossina*, ill-famed as a disseminator of trypanosomes, is confined to Africa, with the exception of one species, which is also found in Arabia. Nineteen species of *Glossina* are now recognised, besides several additional races or varieties. Accurate descriptions of these flies, as far as known up to the year 1911, were given in Major E. E. Austen's "Handbook," and in an important monograph[1] which has just appeared the following additional species recognised since the appearance of that work are included: *G. austeni* Newst.; *G. ziemanni* Grunberg; *G. haningtoni* Newst. and Evans; *G. severeni* Newst.; *G. schwetzi* Newst. and Evans. *Fuscipes*, *maculata*, and *submorsitans* are not regarded as valid species. The most important species of tsetse-fly are *G. palpalis* and *G. morsitans*, which are ordinarily the invertebrate hosts of *Trypanosoma gambiense* and *T. rhodesiense* respectively; the latter organisms can develop in *G. brevipalpis* also, and it is likely that many species of *Glossina* may be efficient hosts for trypanosomes. As is well known, tsetse-flies do not lay eggs, the female producing a single mature larva at a birth; on extrusion the larva conceals itself usually by burrowing into the soil, where it pupates.

A very interesting account is given by Major Austen and Mr. Hegh of the breeding habits of tsetse-flies. *G. palpalis* breeding places are shady, with dry loose soil or dry vegetable débris. The sites chosen have usually water in the vicinity, but breeding places have been found over 1600 yards from any discoverable water. Lloyd records *G. morsitans* breeding in such places as hollows in trees, beneath fallen dead trees or branches, or in burrows of animals, and points out that the one feature common to all the breeding places found was the presence of some relatively dark spot for the fly to conceal herself during gestation. Most of the pupæ were found in unmistakable relationship to native and game paths, fords, drinking places, and salt licks. A similar selection of the vicinity of game paths is recorded by Lamborn for *G. brevipalpis*. The authors record the experiences of many observers regarding the habitat of different species of tsetse-flies, some divergence of opinion being expressed. Neave's interesting classification of East African *Glossina* according to environment is given:

A. Requiring a great degree of atmospheric humidity:—
(1) Requiring a high temperature—*palpalis*.
(2) Not requiring a high temperature—*fusca*.
B. Requiring only a moderate degree of humidity:—
(1) Requiring comparatively little cover—*pallidipes*.
(2) Requiring fairly heavy timber and bush—*brevipalpis*.
(3) Requiring more or less dense forest—*austeni*.
C. Independent of water and most active in a dry atmosphere—*morsitans* and *longipennis*.

The food of tsetse-flies and their relation to big game is carefully gone into. The question of the dependence of *Glossina*, especially *G. morsitans*, on

[1] Tsetse-Flies, their Characteristics, Distribution, and Bionomics, with Some Account of Possible Methods of their Control. By Major E. E. Austen, D.S.O., and Emile Hegh. Pp. 188. 7*s*. 6*d*. Imperial Bureau of Entomology, 41, Queen's Gate, London, S.W. 7.

big game for its food supply is still in dispute, the evidence being conflicting. In his summing-up Major Austen says:—

"The close association admittedly existing between *certain* species of tsetse-fly and big game, in parts of the African continent, must on no account be assumed to be those obtaining between game and *all* species of *Glossina* everywhere throughout their range, . . . though there be definite grounds for considering big game as constituting a reserve of food enabling tsetse-flies such as *G. morsitans*, *G. palpalis*, and *G. brevipalpis* to subsist in a given region, there is as yet no scientific proof that the presence of these animals is absolutely necessary to the continued existence of these insects. Under these conditions the utmost caution would seem to be necessary before definitely advising the taking of measures which would have irreparable results."

Destructive and prophylactic measures occupy a section of the monograph. The predatory enemies of tsetse-flies are enumerated, but the authors do not hope for any considerable reduction of *Glossina* from the enlistment of their predatory foes on the side of the sanitarian. Catching and trapping of tsetse-flies is not a practical measure of control over wide areas of fly-infested country, but where *Glossina* are limited in their distribution good results have been obtained, the island of Principe being a case in point. Here the catch of tsetse-flies for October, 1911, amounted to 16,000, and it is stated that the bird-lime method, combined with other measures of control, achieved such success that after April, 1914, the offer of a reward equivalent to 15*s.* for every tsetse captured failed to produce a single fly. The provision of artificial breeding places reproducing the features of the natural sites selected by the insect has been advocated and employed to some extent, but obviously this method of control to be successful must be combined with clearing operations so that the pregnant females may be forced to resort to the trap breeding places. Of the measures directed against *Glossina*, clearing is by far the most efficacious, and such operations are regularly carried out around villages and settlements, along roads, in the neighbourhood of landing places, wells, &c., but the primary aim of this clearing is in most cases the protection of man rather than any material reduction of tsetse-flies. The authors reproduce Shircore's proposals for the limitation and destruction of *G. morsitans* by location and clearing of the primary and permanent breeding places from which the flies radiate and establish secondary centres. Unfortunately, Lamborn's subsequent investigations do not support the practicability of Shircore's ideas, as the primary foci appear far too extensive to be dealt with as proposed. Ample directions are given for the collection, preservation, and dissection of tsetse-flies, and many other matters of interest and importance are discussed.

The monograph presents in compact form the results of years of labour, and the substance of a mass of memoirs. The conflict of opinion demonstrates in an impressive way the extent of the work and investigations which remain still to be carried out.

ATMOSPHERIC CONDITIONS IN GOLD MINES.

THE relation between atmospheric conditions and the production of fatigue in gold mines on the Rand is dealt with by A. J. Orenstein and H. J. Ireland in recent numbers (Vol. IV., Nos. 1 and 2) of the *Journal of Industrial Hygiene*. The authors present an excellent summary of knowledge on this aspect of industrial activity, drawing particular attention to the work of Leonard Hill and to the value of the katathermometer. They stress the important part played in mining operations by heat and humidity in diminishing activity and by cool moving air in postponing the onset of fatigue. The possible value of ozone is touched upon. They proceed to describe experimental work carried out under mining conditions in which three different specially devised ergometers manipulated by natives were used. The first was a hammer dynamometer, designed to register work similar to that of hand-drilling; the second was essentially a band-brake dynamometer driven like a winch; and the third was a finger ergometer on the same principle as Mosso's ergograph. Working efficiency could thus be estimated in different positions in relation to atmospheric cooling power measured by the katathermometer. Working efficiency was found to fall off when the dry "kata" reading fell below 6, until at 1·5 the average efficiency was only 55 per cent., while the body temperature rose to an undesirable degree and extreme fatigue was produced by work. Working in hot places was found a greater physical strain in winter than in summer. After a holiday a worker did better in a hot place after some training in moderately cool places. A small fan, moving 2000 cubic feet of air per minute, operating near a worker, increased his output by 46 per cent. On the other hand, extremes of cooling power may be detrimental and overtax the defensive mechanism. Four hours' work under mining conditions at full capacity represents the maximum spell for efficiency before a prolonged rest period is taken. As a result of the experiments, of which full details are given, an estimation is arrived at that 21 per cent. of output is being lost through inadequate cooling power of the air in the workings; this loss is loss of output only and does not include losses due to increased morbidity which must surely follow excessive strain and fatigue associated with work in oppressive atmospheres. The work of Dr. Orenstein and Mr. Ireland has already been productive of considerable improvement in working conditions underground, and it is clear that considerable effort is being made to diminish the temperature and humidity of the air at great depths.

THE CRAFTSMAN.

THE practitioner, whatever he is called, if he is to be permitted to make his own diagnosis and to decide for himself whether to apply his own peculiar treatment, must, in defence of the public health, have the same background of general information which the medical practitioner has. The *Scientific American* of August devotes a page to a discussion on chiropractors provoked by an earlier editorial article, and this is its reasonable message. Apparently California will shortly be in the position of having to fight a law which would put correspondence-school doctors on the same footing as regular members of the medical profession, and Prof. Walter Alvarez, of California, in his contribution to the discussion, marvels that even well educated and otherwise intelligent men in America cannot see the danger of putting their lives in the hands of a man who a few months before was a chauffeur or a cook. A regular practitioner in Texas relates how, when he attended a chiropractic school, the teachers took good care that no one should fail in his final examination. A brief intensive quiz preceding the test admittedly contained the material which was to constitute the final examination questions. At another school, it seems, the system is for the "class-president" to circulate to each instructor a petition asking for a list of examination questions, which is always supplied after some affable hesitancy. The only entrance requirement in either school was the ability to read and write. The discussion is noteworthy for the clear editorial appreciation of the distinction between diagnosis and practice. If the chiropractor will confine his activities to tickling the backs of persons for whom a competent diagnostician prescribed back-tickling, well and good, but he cannot be permitted to argue that his very ignorance is a virtue any more than some one who denies that the earth is round should be permitted to steer a ship on the assumption that it is flat. He cannot be prevented from holding his perverted view, but he can be kept away from the steering-wheel so long as he holds it. An interested layman who takes part in the correspondence suggests that the chiropractor who honestly believes that susceptibility to disease is a matter of misplaced spinal units, and that a perfect spine confers complete immunity, should get his backbone thoroughly overhauled by brother practitioners and then expose himself to disease under

conditions which orthodox medicine says will lead to infection. If he declines this issue, the chiropractor will then stand ashamed in the presence of Reid and Lazear. The discussion is a fair and useful one and does credit to the pages of a technical journal.

ENDOGENOUS INFLUENCES IN RICKETS.

OF late the teaching that vitamins are an important factor in the ætiology of rickets has been given such prominence that other factors have been, to a certain extent, thrust into the background. In a recent paper Prof. I. Jundell,[1] of the Children's Department of the Karolinska Institute in Stockholm, has adduced numerous arguments against the vitamin theory in rickets, and has developed the theory that this disease is due to "a disturbance of the endogenous production of ferments (hormones), caused by an overloading of the general nutritive functions within certain endocrine organs." The excellent results he has obtained by systematically treating rickets by "relative inanition" have convinced him that the disease is brought on by an absolute or relative overstraining of the general alimentary functions of the cells, and a consecutive checking of the development of certain "osteoplastic" and other ferments. As he points out, rickets never develops in children suffering from persistent vomiting, pyloric stenosis, or an inadequate supply of human or cows' milk, and, on the other hand, underfed children often show abnormal hardness of bone—the antithesis of rickets. In several cases of early rickets he has succeeded in rapidly curing the disease simply by a reduction of the dietary, and in more advanced cases the combination of a reduced dietary with cod-liver oil and phosphorus proved curative in one or two months. But the combination of cod-liver oil with overfeeding did not even prevent the outbreak of rickets. If rickets develops for want of vitamins introduced from without, why, he asks, does it break out only in some of the children fed in an institution on one and the same dietary? The vitamin theory does not explain the fact that it is possible to cure rickets in a child simply by reducing the quantity of the same food that has earlier produced rickets in the same child. Why do feeble and prematurely born children almost invariably develop rickets even when they are breast-fed? Surely, Prof. Jundell writes, endogenous influences must play an important part in these cases. He has seen severe rickets develop during overfeeding with a mixture containing 300 c.cm. of unboiled 18 per cent. cream, 100 c.cm. of unboiled skimmed milk mixed with 600 c.cm. of an aqueous decoction of 42 g. of flour and 30 g. of sugar—a mixture which ought to contain much fat-soluble A-vitamin. With regard to the anti-rachitic properties of cod-liver oil, he doubts whether they are due to a vitamin, and he inclines to the view that the anti-rachitic action of cod-liver oil is due to a product formed within by the animal organism, to be classed among the ferment-like metabolic products of the animal kingdom. As he points out, vitamins are supposed to be the product of vegetable cells, but the cod is a carnivore, depending for its food on the animal kingdom. Prof. Jundell has also tested the vitamin theory by feeding some children on presumably vitamin-rich milk obtained from cows fed on green pastures, and other children on presumably vitamin-poor milk obtained from cows fed on linseed cake, wheat, bran, crushed oats, and peas, and only enough hay of last year's crop to keep the cows in health. The results of this experiment gave no support to the vitamin theory. Prof. Jundell concludes that it is possible to eradicate rickets as an endemic disease simply by the exhibition of cod-liver oil and his system of "relative inanition," and he argues that if every child were examined by a physician about four times before the middle of the second year of life, being guided by the system he advocates, much ill-health would be avoided. Right or wrong, Prof. Jundell has made out a case against the vitamin theory as to the causation of rickets which deserves more than casual consideration.

[1] Acta Pædiatrica, 1922, i., 355.

THE TRAINING OF HEALTH VISITORS.

THOSE who have at heart the efficiency of the public health service will view with grave misgiving an Order of the Ministry of Health, dated Sept. 16th, which rescinds, as from the first day of 1923, the Health Visitors (London) Order of 1909. Under the 1909 Order the Local Government Board set forth the qualifications at that time approved by the central public health authority, and, by enacting that the selection of a health visitor must be approved by the board before appointment, ensured a certain standard of efficiency. Later, in 1916, this standard was further raised by the memorandum on training issued by the Board of Education. Last May, as we have already noted, the Ministry of Health relaxed its scheme for an extension of the two-years' special training course (Memo. 65), and now under the present Rescission Order local authorities will be able to appoint women as health visitors with the barest of qualifications. No doubt authorities with a sense of values in social economics will continue to maintain a high standard for their appointments, but the new Order provides the opportunity for false economy on the part of those which aim at lowering the rates at any cost. There will be a renewal of the old vicious circle: a low standard of training commands a low salary, a low salary keeps out those women who are most needed as health visitors—and few indeed are able to afford a long and specialised training without the guarantee of an adequate salary at the end. The duties of health visitors, terms of office, suspension of office, and payment of salaries, as set forth in the 1909 Order will presumably be annulled by the Rescission Order, but these matters have become well established in practice. It is in the matter of training and consequent working efficiency that the Rescission Order gives cause for anxiety.

SKIN DISEASES IN GERMANY DURING THE WAR.

Prof. Eugen Galewsky,[1] the well-known Dresden dermatologist, remarks that the treatment of skin diseases in Germany during the war was rendered exceedingly difficult by the lack of the necessary ingredients for salves and ointments, and the scarcity of soap and materials for bandages. Substitutes which were irritating to the skin had to be employed for inunction, and clay was used for soap. In spite of the extensive delousing arrangements and the universal establishment of disinfecting stations, pyodermia and scabies were among the first consequences of the war. In 1915 and 1916 the military hospitals were filled with cases of suppurative folliculitis and all forms of impetigo and furunculosis. Shortly after the epidemic of pyodermia had subsided an epidemic of eczema marginatum broke out among the troops and in the military hospitals. Owing to its localisation in the genito-crural and anal folds and on the inside of the thighs, it was readily spread by water-closet seats, bandages, baths, blankets, and thermometers. In 1917 there occurred an extraordinarily severe outbreak of trichophytosis which has not disappeared altogether at the present time, though it reached its high water mark in 1918 and 1919. In Dresden alone Prof. Galewsky treated over 3000 cases in his skin department in the course of 18 months, more than 50 per cent. of all skin diseases being due to trichophytosis. In addition to these skin diseases a number of dermatoses were caused by the use of lubricating oils in the munition factories. These oils were mostly heavy, dark-brown fluids smelling strongly of tar, or they were yellowish-green and fluorescent in character and not purified owing to the lack of sulphuric acid. Such substitutes, in which

[1] The Urologic and Cutaneous Review, August, 1922.

the injurious element was probably acridin, produced various severe skin lesions which were classified as follows: 1. Acute papular and vesicular dermatitis affecting the face, hands, and inner side of the arms. 2. Fine punctate nodules, particularly round the follicles on the fingers, backs of the hands, and arms. As the result of the irritation caused by the oil the nodules increased in size, became transformed into pustules, and spread all over the body. 3. Bronzing of the skin of the face, especially of the nose, ears, and neck. This bronzing of the skin was found not only among the factory hands as the result of using lubricating oil, but also among the members of the upper classes who had used impure vaseline, brilliantine, or pomade for cosmetic purposes. Lastly, a number of cases of melanodermia developed in those who had not used salves or pomades or come in contact with lubricating oils, particularly in middle-aged women. This condition was denominated "Riehl's disease," owing to the first description of it having been given by Riehl of Vienna in 1917, and was attributed by him to the introduction of toxic substances in the food, especially the seeds of weeds in the bread, though the specific substances were not isolated. The prognosis of this form of melanodermia was good, though the disappearance of the discoloration usually took a long time. The best results were obtained by washing the affected parts with hydrogen peroxide solutions in gradually increasing strength, and the application of an ointment composed of hydrogen peroxide, bismuth oxychloride, and sublimate. Change of diet, particularly the substitution of wheaten bread for war bread, helped towards the disappearance of the melanodermia, and thus confirmed the opinion that the disease was due to nutritional causes.

INDUSTRIAL WELFARE.

FOR the third year in succession the Industrial Welfare Society held their annual conference at Balliol College, Oxford. Representatives of over 150 industrial firms met from Sept. 15th to 20th, and in addition to numerous informal discussions and committee meetings, a series of lectures on various aspects of welfare work was given. Mr. F. S. Button discoursed on Welfare under the Whitley Principle, Mr. G. Easthaugh on Employment Departments, Mr. J. H. Robertson on Pension Schemes, and Mr. A. F. Agar on Canteens. In outlining the inception of the canteen, its equipment, management, and finance, he discussed the benefits the canteen buildings afforded as a centre for recreational and social activities for the employees of a firm, and mentioned that there are now over 2000 firms which find it worth while to organise canteens for their workers. Mrs. K. Carney, in an address on Health, First Aid, and Safety, pointed out that no less than 14 million working weeks were lost annually by sickness, due mainly to preventable ailments. The death-rate of our industrial town-dwellers was much greater than that of our non-industrial population and country workers, and this was due, in part at least, to the unhealthy conditions under which many of them worked. Mrs. Carney hoped that medical women would be appointed as certifying surgeons in large factories which employed female labour. Mr. Frank Hodges, lecturing on Health and Welfare in the Mining Industry, said that under the miners' welfare scheme a levy amounting to a million pounds would be collected annually. This money should substantially and radically change the social and industrial aspects of the miner's life. In this country the scheme was the first experiment in industrial welfare on a grand scale, and it ought to be applied to all large and well-organised industries. Mr. Hodges regards recreation and physical fitness as a fundamental part in any scheme of industrial welfare, while housing and social pleasures are no less important.

The medical aspect of welfare work was touched on by Dr. H. M. Vernon, in an address on Record Keeping and Statistics. He pointed out the importance of collecting adequate records of the time lost from sickness, and of endeavouring to track down the causes of increased sickness, whether they were dependent on unhealthy factory conditions, on fatigue resulting from excessive overtime, or other reasons. The time lost by accidents and injuries was specially important. The preparation and study of accurate accident records by welfare supervisors should lead to a diminution of this wasted time. Over-fatigue was a fertile cause of accident in war-time, when long hours were often worked, but it is not so now. One of the potent causes is inexperience; for instance, in certain metal trade occupations fresh workers were found to suffer 255 times more accidents on the first day than they did after six months' experience. In discussing the importance of healthy factory conditions, Dr. Vernon advised that the state of ventilation of the workshops should be systematically ascertained by means of the kata-thermometer. His plea for records of time lost by sickness in industrial life recalls the disappointment, expressed by Colonel A. B. Soltau in THE LANCET last week, that his efforts to compare wastage for minor ailments in war with that in industrial life failed because no statistics were available of industrial wastage. The tentative effort by means of canteens, welfare work, and clinics of firms to work for a better standard of health among employees accentuates the need of consultation between commercial and academic bodies when a syllabus of a course of industrial hygiene is planned. The Harvard curriculum outlined on p. 730 of our present issue might have to be modified in some respects and extended in others to meet the needs of workers in this country.

THE SERUM TREATMENT OF YELLOW FEVER.

THE yellow fever serum prepared by Noguchi and described by him in the *Journal of Experimental Medicine* in 1920 is to receive extended trial on the Gold Coast and a supply is on its way to the hospital at Bassam. The serum is polyvalent in the sense of being prepared from different strains of *Leptospira icteroides*. Increasing amounts of cultures are injected into the jugular vein of the horse until a point is reached when the serum strongly agglutinates this organism. Administered to guinea-pigs within the first 96 hours after infection in successive doses of 0·01, 0·1, and 1 c.cm. it is capable of preventing the development of the disease. At a later stage, when jaundice and nephritis have been present for several days, the serum apparently has no beneficial effect. At its maximum potency the serum in a dose of 0·0001 c.cm., that is to say, 1 c.cm. of a 1 in 10,000 dilution, is able to protect the guinea-pig against at least 5000 minimal lethal doses of the Leptospira. The experience on the Gold Coast will be watched with keen interest.

MEDICINE IN HONG-KONG.

THE small oasis in the Chinese Republic, for the health of which British administrators are responsible, provides a number of clinical problems. Dr. J. T. C. Johnson has just presented to the Colonial Secretary his annual medical report as principal civil medical officer in Hong-Kong. He is there provided with a staff of five medical officers, one bacteriologist, two port health officers, a resident surgeon at the Civil Hospital, and a medical officer for the new mainland territory acquired in 1898. The principal infectious diseases met with in the colony are plague, small-pox, cerebro-spinal fever, cholera, diphtheria, typhoid, and paratyphoid, the number of cases of each being on the down-grade, with the exception of small-pox and paratyphoid. Dr. Johnson considers that the special characters of cerebro-spinal infection may be best explained by positing an insect carrier as in the case of typhus. At the Civil Hospital the two diseases, beri-beri and tuberculosis, account together for a quarter of the total number of patients. The prevalence and character of tuberculosis in children is being carefully studied, as mortuary experience has shown tuberculosis to be a frequent cause of youthful death in Hong-Kong, although Chinese

children drink no cow's milk. Overcrowding and absence of sunlight in the living room, along with the prevailing habit of expectorating at all times and places, may sufficiently account for this mortality. A large amount of general surgery is done both at the Civil Hospital and at the University Clinic under Prof. Kenelm Digby, who is now conducting a weekly out-patient clinic. Much work is done at the public mortuaries, for approaching 5000 autopsies were reported on during the year by the acting government bacteriologist. After pneumonia, broncho-pneumonia, bronchitis, and tuberculosis, the largest figures are shown for various forms of infantile death —congenital syphilis, marasmus, atelectasis, debility at birth; exceptional opportunity appears to be presented here for research in connexion with these deaths. The examination of rat corpses is also conducted at the mortuaries; out of more than 100,000 examined during the year only seven were found infected with plague. Seven Chinese women trained in midwifery attend the poorer classes of Chinese in the colony, and it has just been found possible to substitute Chinese for Japanese staff nurses. At the Bacteriological Institute a large amount of anti-meningococcal serum is prepared; 64 litres were in stock at the end of the year. Rabies vaccine is now being maintained locally, and contagious abortion vaccine is supplied on demand from the Dairy Farm Company.

Particular interest attaches to the new chair of medicine at Hong-Kong University which is shortly to be filled. The conditions of tenure may be seen in our advertisement columns. The University is only ten years of age, and was founded on the initiative of Sir Frederick Lugard with a view to educating Chinese students in European arts and practices, including specially medicine and engineering. Last spring the offer was announced of a gift of 500,000 Hong-Kong dollars, approximately £60,000, for the creation of a modern school of medicine with chairs of medicine and surgery, and a prospect of a further donation for a chair of obstetrics. This gift has enabled the separation in the curriculum of anatomy from surgery. Prof. Digby will continue to hold the latter chair, while Prof. J. L. Shellshear, of Sydney, has been appointed to the chair of anatomy. The chairs of physiology and pathology are now occupied respectively by Prof. H. G. Earle and Prof. C. Y. Wang. In the selection of a professor of medicine preference is to be given to a candidate not exceeding 35 years of age, and the election will be in the hands of a committee of the Board of Education, including two recently appointed professors of medicine in London University. The salary is £800, rising to £1000 a year, which may be supplemented by fees for consultation; it may be added that there is no income tax in Hong-Kong. The chair of medicine should afford abundant scope for teaching and research to anyone interested in the promotion of European medicine in the East.

MEASLES EPIDEMIC IN MANCHESTER.—During the week ending Sept. 16th 293 new cases of measles and 3 deaths were reported. A few weeks ago the new cases were over 500 per week, and in the early summer the average for several weeks was over 1000, with numerous deaths, so that the epidemic is apparently at last on the decline.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—The first of the new series of post-graduate lectures for the autumn session will be given in the West Lecture Hall, Royal Society of Medicine, 1, Wimpole-street, London, W. 1, on Oct. 11th, at 5 P.M., by Sir James Galloway, the subject being the Symptoms and Treatment of Certain Unexplained Granulomatous Diseases. Further lectures have been arranged as follows:—Dr. Eric Pritchard: The Feeding of Infants from Birth to the End of the Second Year. Dr. C. E. Lakin: Indigestion. Mr. Zachary Cope: Some Important but Ignored Symptoms in Acute Abdominal Disease. Dr. S. A. Kinnier Wilson: The Old Motor System and the New. Mr. J. D. Mortimer: The Medico-Legal Position of the Anæsthetist. Copies of the detailed programme can be obtained from the Secretary to the Fellowship at the above address.

"EXPECTATION OF LIFE" NOW AND SEVENTY YEARS AGO.

BY MAJOR GREENWOOD, M.R.C.P. LOND.,
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IN the annual report of the chief medical officer of the Ministry of Health for 1921 the following sentence occurs: "Seventy years ago (the mortality of 1838–54) men of 45 had, on the average, 22·76 more years to live. There was no improvement on this figure for 30 years; on the contrary, it seemed to decrease. In 1901–10 it improved to 23·27 years and in 1910–12 to 23·92 years." In commenting on this report the medical correspondent of the *Times* remarked that "the life expectation of men of 45 is but little better to-day than it was 70 years ago." In a letter printed in the *Times* of August 9th Mr. George King, the famous actuary, stigmatised the comment as a "mistake, based on a fallacy, and caused by serious defects in the old mortality tables." He further stated that "could a correct table based upon the statistics of 70 years ago be constructed, the tale would be very different."

From the last quoted sentence it would seem that Mr. King, in the haste of writing, had overlooked the fact that he himself has provided data from which the error of the old table *can* be approximately measured. In calculating English Life Table No. 3 (mortality of 1838–54) Dr. Farr assumed that the average value of the central death-rate in an age interval is the same as that of the middle year of the interval. Mr. King showed that this assumption was unsound, and, in a paper[1] published in 1908, tabulated the probabilities of dying within a year at each age from 5 to 105 (*a*) as shown by Farr in E.L.T. No. 3, (*b*) as deduced from the original data by a more accurate method.

If the probabilities of dying are given, it is, of course, a simple arithmetical operation to calculate the expectations of life at the different ages. Using Mr. King's improved values, I find the expectation of life at 45 for the 1838–54 mortality data to be approximately (I have made the usual assumption that the complete expectation of life at age x exceeds the curtate expectation at that age by 0·5 years—an approximation which is extremely close to the truth at all ages from 2 to 80) 22·70 years, so that Farr's original value is only in excess by about 22 days, or 0·26 per cent. Even so late as age 60 the error is less than three months (original value 13·53 years, corrected value 13·30). At ages over 70 the error is serious—e.g., at 75, corrected value 6·08 years, value given by Farr 6·49 years.

Obviously any argument which was valid when the average upon which it was based was taken to be 22·76 years is not materially weakened by the substitution of 22·70 years; hence, as it seems to me, the medical correspondent was reproved with undue emphasis and perhaps the value of Farr's pioneer work unduly depreciated in the eyes of the non-medical reader. The arithmetical reason why even very serious relative errors in the rates of mortality at the later ages—the errors were very serious, involving an under-statement of more than 20 per cent. at age 90—has so little effect upon the average after life-time of the life table population at 45, is that the numbers surviving to the later ages are, relatively, so few that their contribution to the average is small. Thus, the number of complete years lived by 100,000 persons alive at 45 after that age is 2,220,413 on the basis of the improved probabilities for E.L.T. No. 3. Only 661,613 of these years are lived after attainment of 64, less than 30 per cent. of the total; only 195,314 after attainment of 74, less than 10 per cent. of the total.

Yet the question remains to be asked whether we should not discourage the use of "Expectations of Life" for comparative purposes. Their only justi-

[1] Jour. Inst. Act., 1908, xlii., 272.

fication has been that they are convenient means of summarising the effects of mortality beyond a certain point in life. We have just seen that they are not sensitive to quite serious modifications of such rates; actuaries speak of them with some contempt and their partisans are mostly medical men or journalists. Thus Mr. Henry, Deputy Government Actuary, recently spoke[2] of the expectation of life as a "horrible term," and added that "it had no practical meaning, and it had caused more trouble in the minds of laymen, he thought, than almost any other actuarial function."

My own view is that no useful purpose is served by going behind the death-rates at ages. The simple comparisons between rates of mortality (males) of 10·5 per mille in 1846–50 and 5·3 per mille in 1906–10 at ages 25–35, and between 33·2 in 1846–50 and 31·2 in 1906–10 at ages 55–65, set beside the contemporaneous Swedish rates (at ages 25–35, 8·9 in 1846–50, 6·0 in 1906–10; at ages 55–65, 36·9 in 1846–50, 20·1 in 1906–10) are as cogent evidence in support of the conclusion that our rates of mortality in later adult life are relatively unfavourable as the ostensibly more scientific "expectations of life" at ages.

INDUSTRIAL HYGIENE AND INDUSTRIAL MEDICINE.

CONSIDERABLE interest was excited a year or two ago by an announcement that one of the well-known London undergraduate medical schools was initiating a fund to establish a Chair of Industrial Medicine. The scheme has not yet borne fruit; it is not surprising that in a period of depression it should be difficult to collect money for an objective that is not very clearly defined, and, moreover, lies outside the undergraduate curriculum. Doubtless the Institute of Hygiene to be established in London, with the support of the Rockefeller Foundation, will devote energy to the solution of industrial problems and to the development of an issue of medicine still in a state of dependent infancy.

Industrial medicine is perhaps an unfortunate term; the insignificance of any curriculum which could be built on foundations at present available might be a subject of reproach if we did not find constantly that it is on advances in physiology, rather than in medicine, that we have to wait. Industrial hygiene must be understood before industrial medicine can grow. It is therefore of interest to study in some detail the syllabus of the courses in industrial hygiene announced for the coming session by the Harvard School of Public Health at Boston, and published by the University of Harvard in their official register, Vol. XIX., No. 36.

The Development of Harvard University Courses in Industrial Hygiene.

Harvard University in 1918 received funds with which to establish facilities for the training of industrial medical personnel and for laboratory, clinical, and field research in matters relating to the health of industrial workers. The funds were contributed by New England manufacturing establishments and interested individuals, and the gifts were without special restriction.

The experience of three years has shown that, in so far as students are concerned, the greatest needs are for brief courses or groups of courses covering some special field in industrial hygiene, supplemented by longer programmes of study and research leading to higher degrees. A survey of the yearly bulletins issued by the Division of Industrial Hygiene shows the gradual trend toward concise and definite opportunities for work which has taken place as experience has accumulated. It has not, however, been possible until the present time to offer advanced work of varied and substantial type nor have the brief programmes been so concentrated and numerous as is desirable. In the summer of 1921 Harvard University received a generous endowment from the Rockefeller Foundation with which to establish a new School of Public Health. The Division of Industrial Hygiene at once became a part of this school, and, while maintaining all the work heretofore offered, has been able to broaden and extend its work.

[2] Jour. Roy. Stat. Soc., 1922, lxxxv., 555.

Admission Requirements and Degrees.

Students entering for courses leading to a degree or for brief periods of special work must register in the School of Public Health and must satisfy the committee of their fitness to pursue an approved course. The School of Public Health recognises the desirability of admitting students for brief and highly specialised courses of study and practice, but considers it necessary to reserve these opportunities for persons whose academic or field training is recent and gives promise of success in the programme outlined. In the case of special students no degree is given—merely a statement of the work done and the grades attained.

The degrees offered in the School of Public Health are as follows: (1) Bachelor of Public Health; (2) Master of Public Health; (3) Doctor of Philosophy (in Hygiene); (4) Doctor of Medical Sciences; (5) Doctor of Public Health. Applicants for degrees are asked to submit a general outline of their plans to the Secretary.

Several fellowships are also available for award to those qualified to take up work in any of the medical sciences bearing upon public health, in vital statistics, or in the more directly practical divisions of public health work. The salaries are $1200. Correspondence concerning these should be addressed to the Secretary of the Harvard School of Public Health, Boston, Massachusetts.

A Short Course.

An intensive course of industrial hygiene, extending for one month, is under the general direction of Dr. Wade Wright, Instructor in Industrial Medicine, with the coöperation of special lecturers and assistants. The course comprises 96 hours, of which half are devoted to didactic instruction, and half to clinic demonstrations and visits to industrial and mercantile establishments. The time of the student is allotted as follows:—

Industrial Medicine (22 hours).—Twelve lectures on industrial toxicology, four lectures on certain specific industrial diseases, and six attendances at Massachusetts General Hospital, where cases of industrial disease are observed and methods for the study of industrial morbidity demonstrated.

Industrial Medical Practice (12 hours).—Industrial medical service, including dispensary organisation, personnel, methods and records; physical examination, industrial psychiatry and health education extended over eight hours, while two hours are devoted to the discussion of nutrition and industrial cafeterias and two hours to mercantile health work.

Factory Hygiene (14 hours).—Ventilation, exhaust systems, humidity and dust determinations are the subject of four lectures and one demonstration; illumination and photometric determinations, two lectures and one demonstration; sanitary installations and restaurants, one lecture; and industrial seating, one lecture.

Factory Operation.—A course of eight lectures on industrial organisation and methods is given.

Labour Legislation.—Workmen's compensation laws and the problems specially concerning women and children in industry are discussed in four lectures.

Field Investigation.—Visits to representative industrial and mercantile establishments are estimated to take eight half-days and two whole days.

General Course.

For students who desire to prepare themselves for work in the field of industrial hygiene, programmes may be arranged extending over a full academic year, leading to the degree of Bachelor of Public Health. It is suggested that the following courses, in whole or part, would be of special value as preparation for industrial medical service: Industrial Toxicology, Ventilation and Illumination, Vital Statistics, Physiology.

A general course may be modified in a great variety of ways. Certain students may require experience in such subjects as Bacteriology, Tropical Medicine, Epidemiology, Public Health Administration, or advanced Vital Statistics. The Administrative Board of the School of Public Health considers individual programmes in accordance with the needs and training of applicants, and exercises complete freedom in recommending students to the faculty for degrees. Successful completion of eight months' work in residence may result in the attainment of the Bachelor of Public Health degree, even though the entire year has been spent in but one or two subjects.

While the degree of Bachelor of Public Health and that of Master of Public Health are not confined to medical men, the degree of Doctor of Public Health is open only to those who have recently received a doctor's degree from an approved medical school. Two years are required to obtain the degree. During the first year the candidate will occupy himself with courses bearing upon his major interest in industrial hygiene. The second year is devoted to work in his special field and to the writing of a thesis.

A detailed syllabus of the general course is as follows:—

Industrial Toxicology.—Dr. Alice Hamilton, Assistant Professor of Industrial Medicine, gives an advanced course which includes lectures, conferences, and assigned reading upon the industrial poisons together with visits to factories and definite studies of field conditions. Highly trained and suitably qualified students are accepted for special research work in toxicology.

Ventilation and Illumination.—Dr. Philip Drinker, Instructor in Applied Physiology, and Mr. R. M. Thomson conduct a course covering a period of four weeks on the following subjects: (1) The measurement of air flow with use of the Pitot tube, Venturi meter, orifice meter, wet and dry gas meters, hot wire resistance meters, continuous recording devices, and manometers. (2) Psychrometry: Determinations of humidity with wet and dry bulb psychrometers, hair psychrometers, and recording devices. (3) The use of the kata-thermometer. (4) Experiments in air conditioning supplemented by visits to buildings and factories using various types of air conditioning equipment. (5) Physiological aspects of air conditioning by direct experimentation with the effects of temperature, humidity, and carbon dioxide, with the application of these factors to ventilation efficiency. (6) The determination of dust fumes and smokes in air by filters, water scrubbers, Tyndallmeter, and Cottrell precipitator. The effects of particle size, count, humidity, and temperature. Commercial methods of handling dust, smoke, fumes, &c. (7) Physiological and pathological aspects of the above, illustrated by autopsies and microscopic examinations of the lungs of animals exposed to different dusts. (8) Photometric studies of illumination supplemented by visits to factories and buildings. Students desiring to make detailed studies are given opportunity to do so.

Vital Statistics.—Dr. Edwin B. Wilson, Professor of Vital Statistics, conducts an elementary course designed to familiarise the student with the facts established in this field. The methods of graphical representation, the basic theory of probability and correlation necessary alike for the proper analysis of statistical data and for the adequate lay-out of any contemplated statistical survey are taught. A knowledge of the elements of the infinitesimal calculus, though not actually necessary for the elementary course, is desirable, and is regarded as indispensable for all advanced work in statistics. The laboratory is fully equipped with graphical and mechanical aids available for instruction and research in vital statistics.

Physiology.—The advanced courses include detailed discussion of Circulation, the Physical Chemistry of the Blood, Respiration, Metabolism and Nutrition, the Endocrine Glands, Physical Chemistry of Physiological Processes, Demonstrations in Mammalian Physiology, Fundamental Principles underlying the Activity of the Nervous System, and Fatigue and Repair, the headings being dealt with in successive months.

Special Work and Research.

Opportunities for research and special study are open to properly qualified students through the following courses. Additional special courses can be arranged.

Students have opportunities for special study or research in the Department of Hygiene in Cambridge, Boston, which has complete charge of the health of the students in the Cambridge section of Harvard University. It is thus possible to see the actual work of an organisation designed to supervise health, and to collect special data. Physical examinations are carried out on a large scale; the common illnesses of students are made manifest, sanitary inspection is practised, and various methods are utilised for increasing popular information concerning public health by formal courses. There are demonstrations of recreation facilities, not only for the obvious athlete, but for the mass of students; special work in physical training for the purpose of developing better bodily mechanics, better posture, and better care of the feet, and the problem of physical exercise to those who are physically handicapped, can be studied. Here also are favourable opportunities for the intensive study of problems of metabolism and exercise.

The Industrial Clinic at the Massachusetts General Hospital is operated under the joint administration of the hospital authorities and the Department of Industrial Hygiene of the Harvard School of Public Health. While contributing directly to the study and care of patients admitted to the hospital, it presents opportunities for research in the field of industrial medicine. The clinic staff is engaged not only in the study of clearly defined occupational diseases but with the consideration of the relations of occupation and physical disability. Facilities are available for the clinical and laboratory study of disease, for statistical research in problems of industrial morbidity, and for investigation of the broader social aspects of industrial ill-health. Students may arrange for work in the industrial clinic over varying periods of time.

Periods of training and study in industrial and mercantile establishments, opportunities for research on the measurement of dust concentrations in air, on the detection and quantitative determination of industrial poisons, on the special problems of lead poisoning, on applied physiology, and on vital statistics are offered to suitable students. Accessory courses may also be offered in such subjects as Industrial Operation, Nutrition, Industrial Psychiatry, Health Administration in Industry, Legal Aspects of Industrial Medical Practice, Industrial Surgery, Roentgenology, Industrial Sanitation, and Industrial Medicine.

Fees.—The fees for instruction (including laboratory charges except breakage, damage, and loss of apparatus) are $300 for one year; for a half year alone, $180. Students desiring to take single courses may do so at the rate of $50 for one full month's work.

Conclusions.

We have set forth in detail the lessons devised at Harvard for the students, lay and medical, interested in industrial hygiene since the growing public interest in the subject indicates the need for reviewing what can usefully be selected from medicine, physiology, psychology, sociology, and mathematics to form the basis of a connected course of study. In some respects the syllabus seems adequate—as, for example, the section devoted to ventilation; but since the work of Leonard Hill and others on this subject form the outstanding contribution of physiology to the problems of industry, this section is obviously a notable part of the curriculum. On other sides, in particular the sociological, the syllabus even of the longer course seems weak, while problems of fatigue and hours of work, though not worked out to conclusive results, surely deserve a large place. First-aid organisation, benefit societies, and the social and recreational side of industrial life do not appear in the syllabus. The industrial relations between the sexes are not irrelevant to the main subject, nor the question of nutrition, with special reference to the type of meals supplied at canteens; cloak-room accommodation, club rooms, and the general welfare arrangements appear also to receive little consideration.

It may be hoped that when a course is planned in this country it will be stiffened from many sides. We have but little to teach of established fact, and the danger that the public desire for exact information

may outrun our slender resources cannot be forgotten. We are not yet in a position to teach those in charge of industrial undertakings much that is not included in every elementary text-book of hygiene; all we can hope for is that by collecting from various sources any information that seems relevant, and stimulating research students by its inclusion into a general course, a science of industrial medicine may grow. The selection of lead and the omission of, let us say, arsenic and silica for special treatment is illogical. Since we have but little to teach, we must build up a comprehensive curriculum designed mainly to suggest likely paths to those who are inclined to pursue them. In this way only can be accumulated knowledge of sufficient practical value to justify a demand for support of research in industrial medicine from the big industrial firms.

TREATMENT OF BOTULISM: THE SUPPLY OF ANTITOXIC SERUM.

A CIRCULAR (No. 342) has been issued by the Ministry of Health to sanitary authorities in England and Wales stating that it is considered advisable for a supply of botulinus antitoxin to be made available for medical officers of health and medical men in case of need at several centres in order that it may be available for *immediate* use in the contingency of further outbreaks of this disease occurring. Immediate use of this antitoxin is of paramount importance, and the lapse of a few hours between the appearance of symptoms and the use of the antitoxin may make all the difference between its successful or unsuccessful application.

A suitable supply of antitoxin is to be kept by the medical officer of health at the following places, namely: Portsmouth, Plymouth, Bristol, Cardiff, Aberystwyth, Birmingham, Oxford, Manchester, Liverpool, Carlisle, Newcastle-on-Tyne, Hull, Leeds, Nottingham, Cambridge, and Norwich, as well as at the Ministry of Health, Whitehall. This antitoxin has been prepared with great care by the Wellcome Physiological Research Laboratories.[1] There has not yet been any extended opportunity in England for its use, but it is stated that there are good grounds for hoping that it may prove beneficial in sudden cases of poisoning by *Bacillus botulinus*.

Instructions as to Use.

1. *Immediate Administration.*—The only remedy at present known for botulism is botulinus antitoxin given by injection, and even this is unlikely to save life if the disease has progressed to a late stage. It is therefore of the greatest importance *to give the antitoxin at the earliest possible moment*—i.e., as soon as the earliest symptoms of blurred or double vision, giddiness, ptosis, difficulty in speech or swallowing, &c., suggest the diagnosis of botulism.

2. *Method.*—The effectiveness of treatment by antitoxin for botulism is so greatly increased by intravenous injection that this method of administration should always be employed if possible (otherwise the intramuscular method should be used). The risk of serious symptoms arising in persons highly sensitive to horse serum must be recognised, and when, in the judgment of the medical practitioner, such risk is likely to be great, he should administer a preliminary injection of a small quantity of the antitoxin (0·5 c.cm. = 8 minims) *subcutaneously*. If this produces clear evidence that the patient is sensitive (that is, if a reaction appears in half an hour), then the antitoxin must be given with particular caution, the first intravenous injection consisting of 0·5 c.cm. of antitoxin being diluted with 50 c.cm. of saline, and subsequent injections being diluted less and less till the full dose has been administered.

3. *Dose.*—Only large doses will save acute cases. The intravenous dose should be from 20–50 c.cm. of the antitoxin, previously warmed to body temperature, and injected very slowly. This amount may be repeated daily if necessary.

It is advised that all other persons who have consumed the suspected food, but have not yet presented symptoms, should be given a prophylactic dose of antitoxin—i.e., 10 c.cm.—intramuscularly, to be followed by larger doses intravenously should symptoms appear.

[1] Langley Court, Beckenham, Kent. Tel.: Bromley, 1440.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

The Study of Pharmacy.

NEW regulations have recently been issued by the Ministry of Health referring to the curriculum required by persons desiring to work in pharmacies and with dispensing chemists. These persons will have to show a certificate that they have successfully passed through a secondary school, and will then have to study at the University for three years. The first year's course comprises physics, general and systematic botany, as well as chemistry of the organic and inorganic matter, and with practical work in these subjects. In the second year chemical laboratory work is continued, and instruction in the principles of physical chemistry and pharmaceutical chemistry is begun. The summer term of this year brings practical instruction in pharmacognosy. In the third year these latter instructions are continued, and to these are added practical laboratory work dealing with prescriptions and pharmaceutical technique; also instruction in the "principles of hygiene," including bacteriology and serology, disinfection and sterilisation, as far as is required for pharmaceutical chemists. Apart from these subjects, the fundamental rules of pharmacodynamics and toxicology are taught, as well as chemical and microscopical examinations of human excretions and secretions. A course on first-aid is included in the curriculum. Special stress is laid on practical knowledge. Studies dealing with legislation pertaining to public health and pharmacy, as well as historical and commercial knowledge, are freely encouraged. After these three years of university study the candidate may apply for the degree of master of pharmacy. After another year, spent in studying at the University, the "master of pharmacy" may apply for the degree of "doctor of pharmacy." For this purpose he must publish a thesis dealing with any chosen subject pertaining to pharmacognosy or a pharmaceutic theme. Foreign students, who have obtained similar preliminary teaching, may be admitted to the laboratories and classes, and holders of a foreign pharmaceutic diploma may obtain their qualification here, if their studies are equivalent to those described above.

Cultivation of Medicinal Plants.

The present difficulty of obtaining reliable medicinal plants at a reasonable price—nearly all of these come from abroad and have to be paid for in gold—has resulted in a renewed attempt to cultivate some of them in this country on a marketable scale. There exists already a nucleus in the Vienna Botanical Park, an annex of the Botanical Institute of the University. Energetic measures are being taken to induce peasants to cultivate *Digitalis purpurea*, also the ordinary poppy and *Secale cornutum*, the sale of which is always sure. Moreover, scientific investigations as to the influence of manuring and breeding upon the quality and percentage of alkaloids in medicinal plants will be conducted in the above-named institute. The nature of the factors which govern the formation of alkaloids during metabolic processes in plants is amongst the subjects to which the attention of the staff is now being turned. In the analytical laboratory of the Ministry of Agriculture extensive experiments in this direction are being carried out. Long stretches of land, not suitable for other purposes, might easily be stocked with medicinal plants requiring only little care, and the stress upon national expenditure thus relieved.

Penitentiary Problems.

The Ministry of Justice is contemplating a reform of the conditions prevailing at present in our prisons and penitentiaries. Over 36 per cent. of the inmates are known to return to jail for ever-increasing terms of imprisonment after a short interval of freedom. Amongst them are individuals who ought to be detained in asylums for mentally afflicted persons,

but who are insane only occasionally, when they commit their offences against the law. Alienists long since pointed out that a large proportion of criminals hail from those parts of the population which regard work as a burden, or who have never learnt any regular trade. The rules now being drawn up for prisons and workhouses (Zuchthaus) will provide regular instruction in manual work or in a trade suitable to the culprit. It will be the duty of the superintendents of these institutions to find out what kind of occupation would be most suitable for the individual in question; they will also be empowered to present for temporary detention in an asylum such persons as are on the borderline between crime and mental disease. The juvenile criminal will be the subject of special care; already young people are carefully kept away from the influence of older criminals. The judge may at his discretion order the culprit to be handed over to an educational institution where training of a moral and a physical nature is brought to bear upon the young mind. It is now fully recognised by forensic authorities what an important part is played by alcohol. By prohibiting the sale of all intoxicating drinks to persons under 16 the law already tries to minimise its harmful action. Recently the sale of alcoholic liquor has been prohibited just after wages are paid out—that is, on Saturday nights and Sundays. Endeavours are to be made to enfold young people hailing from criminal-producing circles in a large scheme of welfare care. Before these reforms are put into force they will be presented to a committee of lawyers, doctors, and sociologists, in order to obtain the opinions of various experts on a difficult subject.

Anti-Alcohol Campaign in the Army.

The present anti-alcohol trend has now taken a firm footing also in the small army of the Republic. Especially in the newly added parts of the country, where formerly Hungarian customs were prevalent, and also Hungarian wines were cheap, heavy drinking was quite usual. By order of the Ministry of War, all military units sent out as occupational force to these places have been instructed as to the dangers of alcoholism, with special reference to venereal disease. A series of 16 free illustrated lectures, organised and conducted by Dr. Rurz, have been delivered in these districts. Other lectures specially adapted for children and young people have also been arranged. The remaining parts of the army, scattered over the country in small units, are given once a month regular instruction and advice as to the detrimental effects of even casual excesses. This is done by prominent men of the Anti-Alcohol League, who voluntarily undertake the severe task of travelling with a transportable screen projection outfit. Total abstainers are preferred in all promotions in rank, and the leading officers themselves belong to this group. It is hoped that the example given by these senior officers will prove effective in eradicating alcoholism from the Austrian Army.

Sept. 19th.

CZECHO-SLOVAKIA.

(FROM OUR OWN CORRESPONDENT.)

A Demonstration of Rural Hygiene.

A DEMONSTRATION of rural hygiene was initiated in Kvasice under the auspices of the Ministry of Health and Physical Education in coöperation with the International Health Board of the Rockefeller Foundation in March, 1922. Kvasice is a community of some 2000 inhabitants in a rich farming district in Moravia. It was long known for its high typhoid death-rate, caused largely by the unsanitary conditions of the water-supply, and had also a high tuberculosis and infant mortality rate. The population lives under typical rural conditions and is fairly intelligent. Dr. Bohuslav Pour, of the Ministry of Health, has made an extensive survey of local sanitary conditions with an analysis of local statistics in order to obtain a criterion for the results of the demonstration. An intensive public health educational campaign has been launched with the help of the mobile educational unit of the Czecho-Slovak Red Cross. The continuity of educational efforts was assured by enlisting the interest of the teachers and priests in the questions of public health education. A model privy was built under the direction of a sanitary engineer by a local carpenter and placed in the market-place for the purposes of demonstration. The first result of the educational campaign among the population was the decision of the city council that, in spite of the difficult financial conditions, a public water-supply should be organised which would stop for ever the terrible prevalence of typhoid fever. A health centre was opened in the town hall and regular infant welfare clinics are being held there under the direction of the local health officer assisted by a competent nurse. Specialists in all branches of social medicine are being brought to Kvasice in order to study the local conditions and to recommend a programme in their particular specialty. At present a tuberculosis week is in train, in charge of a specialist to whom all the suspected cases of pulmonary disease are being brought for examination; he also carries on an active educational campaign. This is the first time that a demonstration of this character has been undertaken in this part of the world and the interest aroused has been gratifying. Not only are neighbouring communities asking the Ministry to extend the work round the country but the Czecho-Slovak Red Cross is planning to start similar demonstrations in other parts of the Republic.

A State School of Dentistry.

In October a State school of dentistry will be opened in Prague in connexion with the Czech medical faculty. This is the final step for the reorganisation of the dental service in the Republic. In the days of Austrian rule there existed a body of dental mechanics without university education who could qualify by practising for a number of years under a licensed dental technician. Although theoretically they were not allowed to perform all dental operations they disregarded this law with impunity. Besides these mechanics there were professional dentists who were graduates of medicine and were supposed to have acquired knowledge of the specialty through post-graduate studies at the University Institute for Dentistry. But their education was generally rather limited, since no precise duration for post-graduate studies was prescribed. After the creation of the Independent Republic the dentists wanted to stamp out the dental mechanics as practitioners and to reserve the right to practise dentistry for themselves. In spite of the strong political backing which the large body of dental mechanics was able to secure, a law was passed prohibiting mechanics to take in new apprentices; in return for this concession the existing mechanics have been given all the privileges of fully qualified dentists. As soon as the first pupils of the newly-opened State school for dentistry graduate, the Ministry will give no permits to practise dentistry to any who have not passed through the school.

Health Insurance.

The Ministry of Social Welfare, which is entrusted with the organisation of the health insurance, has recently issued a report on the number of persons insured against sickness under the Act relating to compulsory health insurance of workmen and their families. Out of the whole population of the Czecho-Slovak Republic (13½ millions) 3½ millions are direct members of the insurance associations and over 4 millions receive benefit as the family of a member, so that the Insurance Act affects over 7½ millions of the population. This gives an idea of the spread of insurance in the Republic, especially if we bear in mind that the majority of those insured live in rural

districts as farmers. The number of different insurance associations in the Republic is 631, owing largely to the fact that insurance has become an object of political bargain among the different political parties.

Venereal Diseases Act.

The Venereal Diseases Act was proclaimed law on July 11th, 1922, after the amendment of the House of Commons had been approved by the Senate. As the result of the law houses of prostitution have been closed in the whole Czecho-Slovak Republic, and at the same time all measures pertaining to regulation of prostitution have been abolished. The owners of the houses of prostitution had abolished most of the houses previous to the actual passing of the law, so that of the 18 houses in the city of Prague in 1920 only eight had to be closed after the official promulgation of the law.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THREE MARITIME BOROUGHS.

Poole.—The population for 1921 was 43,661, the birth-rate 21·8, the death-rate 11·9, the pulmonary tuberculosis death-rate 0·96, the cancer death-rate 1·2, and the infant mortality rate 73·6. Dr. R. J. M. Horne tells us that the chief occupations are connected with the manufacture of pottery and tiles, gasworks, engineering and timber yards, and fishing, and that unskilled labour forms an undesirably large percentage. On the other hand, a considerable part of the population is residential, taking no part in the industrial life of the town. The chlorination of the water-supply secures a high bacteriological standard and the quantity was ample during the drought. Dr. Horne refers to the need of a standard house refuse bin and complains of shopkeepers fouling the streets with soapy and greasy waste water on Saturdays. No less than 4237 of the 8100 houses have baths fitted. Smoke observations have been begun during the year. The fresh water lakes in the borough have been sprayed with paraffin and the prevalence of mosquitoes considerably reduced. Dr. Horne notes a relapsing type of scarlet fever, very slight initial symptoms followed after three and a half to seven weeks by a repetition of the symptoms in a more pronounced form. He also mentions a persistent diphtheria carrier who was cured by syringing out a bone button which had probably been in his nose for years. The proportion of cases of pulmonary tuberculosis which die without being notified is very high, though there was some improvement last year. Of 21 cases of ophthalmia neonatorum one resulted in complete blindness of one eye and partial blindness of the other. A vigorous campaign was conducted in health week. Dr. Horne contrasts the enthusiasm shown by employers of labour with the apathy of religious bodies in the matter. Of the 70 deaths of infants, 36 were ascribed to "premature birth." The maternity and child welfare scheme provides for the admission of maternity cases and infants who are not thriving to the Cornelia Hospital, and of puerperal fever and ophthalmia neonatorum cases to the isolation hospital. The school report shows that the removal of the dental clinic from the Cornelia Hospital to the ordinary school clinic quarters has had very satisfactory results; during 1921 78 per cent. of the children availed themselves of the treatment offered compared with only 35·5 per cent. in 1920. Dr. Horne considers that the Summer Time Act has a beneficial effect upon the growing child.

Barnstaple.—The estimated population for 1921 was 14,350; the birth-rate 19·7, the death-rate 12·3, and the infant mortality rate 85·1. Dr. H. C. Jonas reports that there have been many severe cases of herpes, largely of the intercostal type. Inquiry as to the reason for non-notification of cases of pulmonary tuberculosis elicits the response that the practitioner thought the case had been notified by the pensions officers or the tuberculosis officer. The fever hospital is an old prison converted and Dr. Jonas thinks neighbouring authorities should combine to provide a joint hospital. The urban and rural councils at present combine to rent a field with two tents for small-pox. The county council have provided a special V.D. clinic in Castle-street. Dr. Jonas thinks the fact that it is a special clinic keeps patients away and that it is unfortunate that the clinic was not established at the North Devon Infirmary. The school reports shows that there has been an improvement in cleanliness, that scabies has almost disappeared, and that the X ray treatment of ringworm has been so successful that there are now no absences from school owing to ringworm. The school dentist, Mrs. Mabel Inder, reports much progress; an increase of attendances from 312 to 869, and the fall of the percentage of those refusing treatment from 23 to 10. It is now, strange to relate, not so much a difficulty to get the children to the clinic for dental work as to prevent some of them from coming too often.

Grimsby.—Dr. B. C. Stevens gives the population for 1921 as 82,330, the birth-rate 26·39, the death-rate 11·9, the tuberculosis death-rate 1·05, and the infant mortality rate 102. Grimsby still has 3000 box privies, and an increased prevalence of both diarrhœa and enteric fever has to be recorded for the hot, dry summer of 1921. It is hoped that the special powers obtained in the Grimsby Act of 1921 will enable the corporation to get rid of these privies in the next five or six years.

SCHOOL MEDICAL SERVICE.

THREE INLAND COUNTIES.

Cambridgeshire.—Routine inspections numbered 3606, considerably less than last year, but more than balanced by the re-examinations and special cases, which were three times as many as in 1920. The 56 ringworm cases present a contrast to the 127 found in 1910, the first complete year of school medical inspection. The school nurse is also the health visitor, and district nurses are employed also; an excellent scheme, but it is unfortunate that Dr. Frank Robinson cannot contrive to have systematic cleanliness surveys of the school, as is done in other counties where similar schemes are in force. He says: "Special inspections of individual schools are made *on complaint* as occasion arises; it is not the practice to require the school nurses to undertake systematic cleanliness surveys of the schools as a whole . . . . it is felt that the time of the staff . . . . is being used to better advantage in other directions bearing more fully on the health of the children." Out of 890 school visits there were only 5 of these "special verminous inspections" by the nurses during the year. Simple instructions are issued to the parents of all children noted as mouth breathers. Of children requiring dental treatment 67·7 per cent. obtained it, and of the 10,000 children inspected by the school dentist 35 per cent. required treatment.

Leicestershire.—The work here is well coördinated. The school nurses are also the health visitors, inspectors of midwives, and infant life protection visitors, while school medical inspection and infant welfare work are carried out by the same doctor. The number of routine inspections totalled 2030; the numbers of children with some defect and of those receiving treatment were 364 and 157 respectively. 392 children received treatment at the three school clinics which are open weekly and where a charge of 3*d.* per attendance is made. Needless to say, the method of payment per attendance is not a satisfactory one. The proposed scheme for a residential open-air school has had to be abandoned for economic reasons. The school medical officers have reported on 133 crippled children. In 59 cases the crippling was due to infantile paralysis, in 41 to congenital deformity or trauma, and in 23 to tuberculosis, while only 4 were cases of rickets. The percentage of refusals for dental treatment dropped from 9 to 8 per cent.

Hertfordshire.—The work is carried out by 15 district medical officers of health and private practitioners under the direction of Dr. Hyslop Thomson. About 40 per cent. of the parents attended the examination. There were 46 school closures during 1921, compared with 176 the previous year. Whooping-cough was responsible for 14 of these, and mumps for 12. 14,216 children were inspected during the year and 31·5 per cent. required treatment of some kind. The percentage of defects remedied was 63·6, a definite improvement on the 38·8 per cent. of 1919, when the Council's comprehensive scheme for treatment was initiated. A special inquiry into the occurrence of enlargement of the thyroid gland was made, and in 0·6 per cent. only was any enlargement found, while only in one or two cases was the condition considered pathological. The reports from the teachers of the two classes for dull and backward children show how much these classes can do for this type of child. It is a pity that one blind and two deaf children should find themselves in a class of this description.

Correspondence.

"Audi alteram partem."

HAS CANCER A PIGMENTARY ORIGIN?

To the Editor of THE LANCET.

SIR,—In his valuable paper with this title, appearing in your issue of Sept. 23rd, Sir George Beatson refers to trophic changes in which I am particularly interested. In a paper which appeared in the *British Medical Journal* for June 12th, 1909, I described trophic changes occurring in those parts of the skin subjected to the greatest exposure to the wear and tear of life, proposing to call these "biotriptic" changes. Such changes are observed most commonly in the backs of the hands—most intense on the back of the second metacarpal, which is the commonest site for cancer of the hand to begin—the temples, and the foreheads of old people. The skin becomes shiny, smooth, thin, inelastic, pigmented, and apparently scarred, a marked example of this in an old woman of 72 being illustrated by a coloured plate in the article to which I have referred. It also alluded particularly to Lister's observations on the behaviour of pigment granules in the cells within the area of inflammation, and I went on to point out that the interest of these observations lay in their relation to two questions:

(1) Whether such neurotrophic disturbance is concerned either directly or indirectly with the genesis of cancer; and

(2) Whether a neurotrophic influence bears upon the direction and limitation of the spread of cancer.

I am, Sir, yours faithfully,

Harley-street, W., Sept. 24th. G. LENTHAL CHEATLE.

To the Editor of THE LANCET.

SIR,—In his deeply interesting article Sir George Beatson raises points of comparative pathology. His suggestive theory of the pigmentary origin of cancer reminds me of that malignant disease, melanosis, in horses. This affection is seen almost exclusively in grey horses and its incidence coincides with the disappearance of the hair-colouring matter, suggesting a perverted functioning of the pigmentary elements. If this disease were carefully investigated a cancer clue might be found. Sir George Beatson raises the question of oöphorectomy in the treatment of mammary cancer and refers to the beneficial influence of the operation upon lactation in cows, which goes to show that there is a close physiological connecting link between the ovary and the mamma. It is just possible, however, the ovaries may exert their functions upon even more remote parts, as the two following cases suggest.

In 1913 I operated on a chestnut hunter mare suffering from warts situated at the friction centres of the body, between 20 and 30 being removed. Within three months a recurrence of a much more malignant type took place, clinically resembling epithelioma. Oöphorectomy was performed and the animal was turned out to grass and forgotten. When seen eight or nine months later no neoplasm could be detected.

In 1920 I was consulted on a neglected and typical case of cancer of the eye, which is not uncommon in cattle. The disease usually begins in the membrana nictitans, extends to the eyelids, thence to the eyeball, finally invading the orbital tissues. This case was too far advanced for surgical treatment and oöphorectomy was performed. Locally hot fomentations were applied, followed by proflavine. The animal, which prior to the operation was losing flesh, now steadily gained in condition and was sold in seven months in fair order. The disease was not cured, but it was checked to such an extent as to convince me that had oöphorectomy not been performed extension would have taken place through the cranial bones to the brain or the animal would have died from septic intoxication.

Similarly testicular secretion appears to exercise an influence on cancer in animals. Carcinoma of the penis of the bull is by no means uncommon. I have removed many of these growths, cauterising the seat afterwards with the actual cautery. Some cases have done well, others have recurred. If the animal is not valuable for the stud, I have castrated and have never found a recurrence. Even in inoperable cases, the neoplasm after emasculation shrivels up and often disappears altogether. In many instances the effect is almost magical.

I am, Sir, yours faithfully,

Bridgwater, Sept. 25th. WILLIAM SCOTT, F.R.C.V.S.

CANCER AND THE PUBLIC.

To the Editor of THE LANCET.

SIR,—In the correspondence columns of your issue of Sept. 16th it is suggested that medical men are backward in educating the public as to the urgent necessity for the early recognition and treatment of cancer. The position is worse than that. Such is the attitude of the medical profession towards the treatment of cancer that the public have come to regard the diagnosis of malignant disease as a knock-out blow from which there can be no recovery. As a result of this the average individual who suspects the occurrence of cancer *tends to conceal rather than reveal* the dread secret; the misery of doubt is easier to bear than the agony of having to face the worst. Let the medical profession pursue a fighting policy and show by their determination resolutely and systematically to use every known weapon to combat this terrible malady that each sufferer has really a chance to survive its attacks, then will men and women more eagerly confide their suspicions to their family doctor, and the present dreadful mortality certainly diminish. To have cancer is a very serious thing, but *not an absolutely hopeless position*; let this be our message to the public. That a certain proportion of patients survive operation for a long time, that sometimes the growth itself spontaneously retrogresses or slackens remarkably, and that a variety of remedies have, in particular instances, been known to afford a valuable measure of relief must be our justification. Hope justified is of itself a great health-giving force.

I am, Sir, yours faithfully,

EDWIN L. ASH, M.D.

Harley-street, W., Sept. 22nd, 1922.

To the Editor of THE LANCET.

SIR,—I welcome Mr. J. E. Adams's letter. Cancer can hardly rank yet with tuberculosis or syphilis as a preventable disease, and no great step has been gained in the discovery of its ætiology. But if all that is known to the medical profession were known to the public, the mortality from this too common disease might be very greatly reduced. All persons over 40 years of age should realise the danger of any form of chronic irritation of the skin and mucous surfaces, including those due to abnormal teeth, smoking, alcohol, gall-stones, constipation, and the like. The importance of early treatment of sore and bleeding surfaces should similarly be advertised, and the fact that pain is a late symptom, often absent. Woolwich

and Leicester have made a beginning in doing this through their medical officers of health, and it is to be hoped their example will be widely followed. Many medical investigators believe that the increase of cancer is due to the excessive and artificial diet usually practised nowadays. It must be allowed they have as yet little evidence to go upon, but is not the suspicion great enough to justify a thorough inquiry? Are cancer hospitals and those who treat many cases of cancer doing all they can to attain this? I am, Sir, yours faithfully,

Buckhurst Hill, Sept. 20th, 1922. SIDNEY DAVIES.

THE HOT OPERATING THEATRE.

To the Editor of THE LANCET.

SIR,—I beg to endorse every line of Mr. R. P. Rowlands's recent paper (THE LANCET, August 5th, p. 309) on the fatuity of operating in heated theatres. Personally I should just as soon think of performing my morning physical exercise as of operating in the poisonous atmosphere of the fug parlours, euphemistically styled modern operating theatres. Have the performers in these lethal chambers ever asked themselves the question, Is such an atmosphere conducive to the bien être of the victim who is already saturated with toxins and is being doped with anæsthetic, both of which render him a likely candidate for post-operative acidosis?

I am all for keeping the patient warm during operation. As a matter of fact, the first operating table purchased by me in 1897 for the British hospital here had a hot-water tank attached. In recent years I have found this purpose to be more conveniently served by having the tables fitted with suitable electric installations which admit of the patients being kept snugly warm, with the result that shock and post-operative lung trouble are comparatively rare incidents. The patient's body above and below the operative field is clothed in wool and dry sterilised towels do the rest. In my theatre a free supply of fresh air pours in continuously through the six windows, two of which are long and narrow at the level of the ceiling. In summer they are kept wide open; in other seasons, on the slightest sensation of stuffiness that window is opened which, judging from the direction of the wind, is likely to give the air without any current which might perturb an exposed intestine.

Since 1894, I have always endeavoured when operating to make my body feel as light and airy as I wish it to be in the middle of a hard single at tennis or at all-square on the last green. For feeling fresh and fit in the morning, I so far have not found anything equal to sleeping in a room with a large open window. I should be pleased to learn from any surgeon something in regard to the feeling experienced after an hour in bed with the mouth and nose covered up with the sheets.—I am, Sir, yours faithfully,

JOHN O'CONOR, K.B.E., M.D.

Buenos Ayres, August 31st, 1922.

THE VOMITING OF PREGNANCY.

To the Editor of THE LANCET.

SIR,—I am sorry that Prof. V. J. Harding and Prof. B. P. Watson, in their further observations on the vomiting of pregnancy, as published in your issue of to-day, omit all consideration of the physical forces obtaining in the abdomen of the pregnant woman quâ the rise of vomiting in pregnancy. Is it not strange, recognising as everyone does, that chemical change is dependent on physical conditions, even in the test-tube and certainly in the laboratory, to find that chemical processes in the body are supposed to occur irrespective of such forces?—as though, indeed, chemical action (an interaction between presumable *materials*) were spiritual in nature, mystical, intangible. All the more remarkable is this barring of the door to the laws of physics, when we reflect that man is recognised as consisting of so many pounds avoirdupois of living matter (stuff that can be put in the balance and weighed); and that many of the processes which occur within him, by means of which he goes on living, are purely physical. The circulation of the blood—obviously—is determined by physical forces. The taking of food, its mastication and swallowing—similarly—are physical; whilst the processes of digestion itself are largely dependent on physical force. How could it and assimilation proceed and the bowel be cleansed and defæcation occur without peristalsis? In the same way, the urine reaches the bladder by the activity of the ureters and is discharged by mechanical means. Parturition itself is impossible without the rise of a pressure within and all the complications of childbirth resolve themselves into the dealing with *mechanical* difficulties.

How, then, if man is so mechanical a being, are aberrations in his working to be explained with the laws of physics excluded? Are we to suppose that metabolic processes occur in the liver irrespective of physical conditions? Does not the liver play its part in virtue of its blood-supply and the blood-flow through its capillaries: and is not this dependent on physical conditions? And if this blood-flow be interfered with, are we to be surprised that aberrations of function occur? And the kidney?—is not the kidney similarly dependent for its working on an adequate blood-flow—i.e., on an adequate aortic blood pressure? We know quite well that if the blood pressure falls sufficiently the kidney ceases to function. How, then, can we say that the kidney functions irrespective of physical conditions? Is it possible, is it reasonable, to attempt an explanation of aberration of metabolism, if the conditions essential to the normal performance of organs are omitted from consideration?

The authors of this very interesting paper refer to no such conditions. For them "the primary factor" in the vomiting of pregnancy which occasionally passes, as a rule insensibly, into the pernicious type, shows itself ætiologically "as a glycogenic disturbance in the maternal liver." But how does this arise? Prof. Harding, in his paper in THE LANCET of August 13th, 1921, tells us it is due to the fast of night; but that this, whilst ordinarily producing no symptoms, does so in pregnancy because "there is added an extra strain upon the glycogen supply due to the pregnant condition itself." But against such a supposition is the fact that prolonged starvation in the non-pregnant produces no vomiting, and that post-anæsthetic vomiting does not occasion continuance of the vomiting. The morning sickness of pregnancy, it seems to me, is much more akin to sea-sickness, and to the feeling of nausea induced by descending rapidly in a lift. These mechanical conditions determine changes of pressure in the abdomen, and interfere reflexly with the blood-flow through many parts; and that such, if continued, may produce aberrations in function of these parts will, I think, be difficult to push aside.

I believe the vomiting of early pregnancy is set up reflexly by changes of pressure occurring in the abdomen with the rising from bed—a conception I put forward in 1913.[1] If instead of subsiding, as it usually does, this morning sickness of pregnancy persists (because the mechanism controlling vomiting has got into the habit of determining it—i.e., because of a neurosis), then other factors come on the scene. The metabolic factors, which the authors of this paper refer to, doubtless participate; but besides this, besides all the factors they mention, is the reaction induced by the act of vomiting—i.e., the interference with the blood-flow through the liver which such vomiting must occasion. I published my conception of the mechanism in play in a letter to your columns earlier in this year.[2] Is it possible to imagine that vomiting, if violent (and I have yet to learn that none of the vomiting in cases of pernicious vomiting is

[1] The Intra-Abdominal Pressure in Pregnancy, Proc. Roy. Soc. Med., 1913, p. 291.
[2] The Pernicious Vomiting of Pregnancy, April, 1922, p. 867.

violent), can be associated with an undisturbed flow of blood through the liver capillaries?

After all, what is necessary is the explanation of the lesions found post mortem in cases of pernicious vomiting. If we can explain the rise of these, we shall have explained much. I am happy to see that Profs. Harding and Watson "feel certain that . . . . (these are) not due to any specialised toxins elaborated by the growing fœtus or its appendages, combined with the failure of the mother to manufacture an antitoxin." That is a great admission—and a great advance: for, as you know, the lesions found post mortem in cases of pernicious vomiting are very similar to those found in patients dead of eclampsia. The lesions, I submit, explain everything: they explain the death of the individual and her coming to the post-mortem table. But if the lesions of pernicious vomiting, which are so like those found in eclampsia, are not due to any specific toxin, then I submit that the lesions found in eclampsia are due to a cause similar to that existing in pernicious vomiting and similarly are not to be explained by a specific toxin. The time is working to such a climax; and I hope it will not be long before the lesions of eclampsia are mechanically explained.

There is but one word more, and that is about the "defences" of the mother "against the newcomer." The scrapping of all ideas concerning "antitoxins"—the most absurd idea that has ever arisen—leads us necessarily to normal processes, and to ones we can readily understand. It is the hypertrophy of the excretory organs and their continued functioning that explain exemption from eclampsia. Pregnancy, say Profs. Harding and Watson, occurs in an individual "which has ceased to grow." But they omit to mention that that organism can respond by hypertrophy of special tissues. If, in the non-pregnant, one kidney is removed, the other hypertrophies; in pregnancy, the power to hypertrophy of special organs is not impossible. That the kidney hypertrophies in pregnancy is shown by the increased output of urea in normal pregnancy: that the liver in normal cases hypertrophies will be hard to disprove.

Such changes can only occur with increased blood-supply to the organs which must work harder: obviously, if such an increased blood-supply, dependent as it is on physical forces, is not available, a catastrophe of some sort must happen.

I am, Sir, yours faithfully,

R. H. PARAMORE, F.R.C.S. Eng.

Brook-street, W., Sept. 23rd, 1922.

RHINO-LARYNGOLOGY.

To the Editor of THE LANCET.

SIR,—The letter from Dr. W. R. Robertson in your issue of Sept. 23rd interests me particularly as coming from an old friend and a pioneer worker in oto-rhino-laryngology. For the general practitioner I recommend, like Dr. Robertson, the opening of the antrum through the canine fossa as the simplest and surest. He should at the same time make an opening from the antrum into the nose, and, if practicable, remove the anterior third of the inferior turbinated body. This method, although the easiest and safest for the non-specialist, is not the best for those who have some expertness in nasal surgery, who, according to my latest experience, will get the quickest results from the opening of the most anterior part, "the fo'c'sle," of the antrum through the nose by Canfield's method.

For the sake of those who may wish to try it I will quote the description I gave of it in the Section of Laryngology of the Royal Society of Medicine, when exhibiting one out of a number of cases of this operation:—

> An intra-nasal vertical incision is made along the anterior edge of the pyriform fossa, the periosteum is reflected outwards and inwards and the muco-periosteum lifted from the floor of the nose, the outer wall of the inferior meatus and the outer surface of the inferior turbinated body, along the lower margin of which it is divided, so as to form a flap of muco-periosteum. The anterior angle of the antrum is opened by means of a gouge and mallet and enlarged by means of bone forceps, mainly along the outer wall of the inferior meatus; the flap of muco-periosteum is reflected on to the floor of the antrum and an opening is thus maintained, through which it is extremely easy for the patient to wash out the cavity.

The rapidity with which the discharge has dried up after this operation as compared with other similar operations has, in my experience, been most striking. Apart from the freedom of access for irrigation and for ventilation, the so-called chimney or exhaust action probably plays an important part in the currents of inspired and expired air which pass over the orifice. The flap is not a sine qua non, although a valuable refinement. The accessibility of the interior of the antrum for inspection and curettage is all that can be desired. The chief difficulty is the management of the hæmorrhage, but by careful plugging with cocaine and adrenalin beforehand, and the judicious insertion of gauze between the bone and the soft tissues during the operation, this can be fairly easily overcome.

I am, Sir, yours faithfully,

London, Sept. 25th, 1922. JAMES DUNDAS-GRANT.

THE SCOPE OF VACCINE THERAPY.

To the Editor of THE LANCET.

SIR,—Dr. Jenkins, in his reply to my letter, puts the matter of dosage in a different light. The difference between us, such as it is, appears to be that whereas he prefers to reach his highest dose in eight injections, I incline to about 16; the advantage of the latter course is that excessive reactions (with the higher doses) are more easily detected. My own experience leads me to avoid undue steepness of gradation of dose by every means in my power. As regards gonorrhœa, my experience is that, provided the idiosyncrasy of the patient to a gonorrhœa vaccine is first ascertained—and this is essential—a stock non-detoxicated vaccine can be pushed to much higher doses than is perhaps customary, and by this means the resistant cases can often be rendered amenable to treatment; it is then often more efficacious than the detoxicated variety. I take it that both Dr. Jenkins and I employ stock polyvalent organisms in the treatment of this infection. I do not think it "unfair" to compare detoxicated stock with autogenous non-detoxicated vaccines, because this is precisely the alternative with which the practitioner is usually confronted. He can buy detoxicated stock vaccines from a commercial firm, and often does so in the first instance. My point is that this procedure is often disappointing, and that he then frequently obtains better results from an autogenous vaccine from a specimen taken secundum artem and treated by a technique in which methods, such as the serum-resisting test, are employed to determine the pathogenicity or otherwise of the organisms isolated by culture.—I am, Sir, yours faithfully,

A. KNYVETT GORDON.

Bedford-square, W.C., Sept. 26th, 1922.

DEATH IN THE ALPS.

To the Editor of THE LANCET.

SIR,—With reference to the correspondence on this subject in your columns, may I venture to suggest that the impulse to throw oneself from a height is not necessarily suicidal. People who have the impulse have seldom any desire to end their lives. I myself have the impulse strongly, but, of course, under control, and if I analyse it, I would say it was the fascination of going through the air and a vague idea (due to far remote ancestry) that one might spread out one's arms and swim or fly.—I am, Sir, yours faithfully,

EDITOR OF A NURSING CONTEMPORARY.

Sept. 23rd, 1922.

THE jubilee effort in Oldham has resulted in £7820 being raised for the Oldham Royal Infirmary.

Obituary.

SIR JAMES ORMISTON AFFLECK, LL.D., M.D., C.M., F.R.C.P., F.R.C.S. EDIN.

THE death of Sir James Affleck, consulting physician to the Edinburgh Royal Infirmary and to the Royal Edinburgh Hospital for Incurables, on Sept. 24th, will cause grief to many of his old pupils. Educated at Edinburgh University, he graduated M.B., C.M. in 1867, and obtained the L.R.C.S. Edin. in the same year. Two years later he achieved the M.D. degree and became a Fellow of the Royal College of Surgeons of Edinburgh. Soon after he was appointed lecturer in medicine at the University, working under the direction of Sir Douglas Maclagan, becoming also a lecturer at the Surgeons' Hall. When assistant physician to the Royal Infirmary he became interested in the exanthemata, and he continued to make a study of this branch of medicine throughout his life. In 1875 Sir James Affleck was made a Fellow of the Royal College of Physicians, Edinburgh, and in 1885 a full physician to the Royal Infirmary, where as a medical member of the Board his interest in the administrative side of the institution, and in the improvement and equipment of the nursing staff, was of great value. He was also attached as physician to the Longmore Hospital for Incurables, in the founding of which he had played an important part. Sir James Affleck held the post of examiner in medicine and clinical medicine at the University of Edinburgh for many years, acting also as examiner in medicine at the Royal College of Physicians. In 1908 the University of Edinburgh conferred upon him the degree of LL.D. and three years later he received a knighthood. He was president of the Medico-Chirurgical Society of Edinburgh from 1905 to 1907, and is reported modestly to have refused, more than once, the presidency of the Royal College of Physicians of Edinburgh, on the Council of which he sat.

Sir James Affleck had many rare qualities of mind, one of which was his ability to make medical lore intelligible to the lay public. His expositions of medical subjects in the ninth edition of the Encyclopædia Britannica were particularly successful in this respect. His distaste for formal social gatherings did not prevent him from being a very pleasant companion when he was induced to attend them. The quality which he himself valued most highly in medical men, and lost no opportunity of inculcating into his students, was that of a broad sympathy with the troubles and catastrophes, not only physical, that fell upon his patients, and with any happiness experienced by them. This sensibility, tempered by shrewd common-sense, he possessed himself to a special degree, and his wide influence may be attributed in great part to this quality. As a physician he was an accurate observer, and though receptive of newer lines of thought and always willing to adopt modern aids to practice, he retained the power of intuition which enables men of his years to dispense with them.

Though his active work had ceased, Sir James Affleck's death is a loss to the profession. He was a clinical teacher of merit and a fine representative of the old type of general physician.

PROF. WERTHEIM SALOMONSON.

THE sudden death of Prof. J. K. A. Wertheim Salomonson, of Amsterdam, removes an ardent and ingenious spirit from international medicine. He was in his fifty-eighth year and was holding office as rector magnificus in the University. Born on Feb. 18th, 1864, at Ambt-Almelo, Salomonson received a sound high school education before entering on his medical studies at the University of Leyden, where he graduated in 1888 with honours. His doctor's thesis on "Stereognosis" showed the bent of his later work. In 1893 he became privat-docent at the University, and in 1899 he was appointed to a special chair in nervous diseases and radiology, entering on his office with a notable discourse on the "Doctrine of the Neurons." Prof. Salomonson's contributions to neurology and electrical methods were enhanced by his mastery of technique. He had a profound knowledge of nerve-muscle reactions, and he carried a stage further Dr. Lewis Jones's work in ionic medication, the instruments which he employed in teaching and research being largely of his own design. Last year he came over to demonstrate before the Section of Ophthalmology of the Royal Society of Medicine a series of instruments designed for revealing to students the interior of the eye. Salomonson was a Knight of the Order of the Lion of the Netherlands and an honorary member of the Rontgen Society. When the Anglo-Batavian Society was arranging an exchange of lectures by distinguished specialists, he was chosen to give an address on "Tonus and Reflex" at the University of London, in which he threw welcome light on the Babinski hallux phenomenon. His death is felt as a loss by neurologists and radiologists in many countries.

Medical News.

DIPLOMA OF PSYCHOLOGICAL MEDICINE.—A fifth course of lectures for this diploma will be held at the Maudsley Hospital, Denmark Hill, London, S.E., this autumn. Part I. of the course will consist of eight lectures on the Anatomy of the Nervous System, by Sir Frederick Mott, F.R.S., on Tuesdays at 2.30 P.M., commencing on Oct. 10th; eight lectures on the Physiology of the Nervous System, by Dr. F. Golla, on Fridays at 2.30 P.M., commencing on Oct. 13th; eight lectures on Psychology, by Dr. Henry Devine, on Thursdays at 2.30 P.M., commencing on Oct. 12th. Part II. of the course will follow in January, 1923. Further information can be obtained from the Director of the Pathological Laboratory at the hospital.

NORTH-EAST LONDON CLINICAL SOCIETY.—A meeting of this Society will be held at the Prince of Wales's General Hospital, London, N., on Oct. 5th, at 4.15 P.M., when a lantern lecture will be given by Sir Archibald Reid on the X Ray Examination of the Pyloric End of the Stomach and its Vicinity. The annual dinner will take place on Thursday, Oct. 12th, at 8 P.M. Further information may be obtained from the hon. sec., Mr. W. E. Tanner, at the hospital.

CHARTERED SOCIETY OF MASSAGE AND MEDICAL GYMNASTICS.—The annual members' conference will be held from Oct. 5th to 7th. The programme includes lectures by Sir W. Arbuthnot Lane, Mr. R. C. Elmslie, Dr. W. J. Turrell, Sir Maurice Craig, and Prof. Winifred Cullis at the Steinway Hall, 15, Lower Seymour-street, London, W. 1, and lecture-demonstrations at St. Thomas's Hospital, Physico-Therapeutic Department, by Mr. W. R. Bristow, Dr. J. B. Mennell, Dr. R. Timberg, and Dr. G. Murray Levick. A demonstration of gymnastic class work for corrective purposes, by Miss P. A. Starling, will take place in the Upper Gymnasium, Chelsea College of Physical Education, Manresa-road, S.W. 3. Further information may be obtained from the secretary, 157, Great Portland-street, London, W. 1.

NATIONAL MILK CONFERENCE.—As we have already announced, a conference on the milk question will take place in the Council Chamber of the Guildhall on Oct. 16th, 17th, and 18th, when all aspects of the subject will be fully considered. Those interested can obtain application forms from the hon. sec., Miss H. M. Williams, at 3, Bedford-square, London, W.C. 1. Admission is only by ticket obtainable on or before Oct. 12th.

THE NATION'S FOOD EXHIBITION.—The exhibition held at Olympia from Sept. 6th to 26th served a good purpose by bringing to the notice of the public a number of useful food preparations, and various labour saving devices, conducing to economy in the kitchen. Lectures were delivered by medical men during the course of the exhibition on the Psychology of Feeding, on Feeding in Relation to Teeth, on Purity of Food and Public Health Policy, on Children's Foods and Diets, and other important subjects. Exposition of the methods used in cold storage was another educational feature of the exhibition, while a model home farm demonstrated the best methods of utilising a small piece of ground for the production of milk, butter, cream, eggs, and bacon. It is proposed to repeat the exhibition in 1924.

ST. THOMAS'S HOSPITAL OLD STUDENTS' DINNER.—This dinner will take place at the Princes' Restaurant, Piccadilly, on Nov. 10th, at 7 for 7.30 P.M. The chair will be taken by Sir Charles Scott Sherrington, P.R.S. The price of the dinner, inclusive of stewards' fee, is 15s. The hon. secretaries are Mr. L. B. Maxwell and Mr. P. H. Mitchiner, St. Thomas's Hospital, London, S.E.1.

CREMATION SOCIETY OF ENGLAND.—The report of this society for the year 1921 states that during that period there were in Great Britain 1922 cremations, as compared with 1796 in the preceding year; those at Golders Green increased from 851 to 893, and at Woking from 149 to 150. The membership of the society has also increased. A useful feature of the report is a list of American and continental crematoria.

THE LATE DR. DANIEL BIRTWELL.—The death of Dr. Birtwell, a well-known practitioner in Natal, is reported from Durban. Dr. Birtwell qualified L.R.C.P., L.R.C.S. Edin. in 1875 and shortly afterwards settled in South Africa. He served as Government district surgeon in various districts of Natal for 44 years, retiring only three years ago, and was much respected throughout Natal.

BRITISH DENTISTS' HOSPITAL.—This institution, whose treatment centres are at Rushey Green, S.E., and Camden-road, N.W., with branches at Lewisham and Clapham and clinics in connexion with borough councils, shows by the report for 1921–22 that there were 13,600 attendances of patients. Fillings numbered 2076, scalings 587, and extractions 4990 with gas, 1652 with local anæsthetics, and 1709 without anæsthetics. There were 1243 dentures supplied (including repairs), and advice, root treatment, and temporary attention given in 3450 cases. Efforts will be made in the immediate future to open fresh centres in busy thoroughfares.

DONATIONS AND BEQUESTS.—By the will of the late Mr. P. E. Roberts, of Bournemouth, the testator left the following, among other, reversionary bequests on the death of his wife: £5000 each to Dr. Barnardo's Homes and the Ragged School Union and Shaftesbury Society, and £500 each to the Royal Victoria and West Hants Hospitals.—The late Mr. Hugh Clifton Hughes, of Llanfairfechan, Carnarvon, left conditionally £1500 to the Llanfairfechan Urban District Council towards erecting a cottage hospital or isolation hospital for infectious diseases. In the event of the bequest not being accepted half of it will go to Epsom College Medical Benevolent Fund.—The late Surgeon Lieut.-Colonel D. Elcum, I.M.S. (retired), has bequeathed over £15,000 to Guy's Hospital in memory of his father, formerly a medical student there.—The late Mrs. E. Torrens bequeathed £200 to St. George's Hospital.

Lord Barnby, of Blyth Hall, Nottingham, head of Messrs. Francis Willey and Co., wool merchants, of Bradford, who has returned to business after an operation, has forwarded to the Lord Mayor of Bradford £5000 for the local hospitals, which has been allocated as follows: Bradford Royal Infirmary, £3000; Bradford Eye and Ear Hospital and Bradford Children's Hospital, £1000 each. Lord Barnby—who is an octogenarian—wrote that he fully realised that many who might need a similar operation had not sufficient money to pay for it, and he hoped his thank-offering would result in the alleviation of suffering in Bradford.

WORTHING HOSPITAL.—Rapid progress is being made with the erection of a new maternity wing as a war memorial. It was stated at the annual meeting of the governors on Sept. 22nd that the work would probably be completed by Christmas and opened early in the new year. The cost of building the new wing has been £5000, nearly the whole of which has been raised. The governors passed a resolution empowering them to appoint a resident house surgeon when the new wing is opened, and also approved of the granting of a pension of £78 per annum to Miss Burford who had been matron since 1894. During the past year the in-patients numbered 422 and the out-patients 1968. The number of in-patients cured or relieved was 379, and there were still 25 on the books at the end of the hospital year. Of the out-patients 1733 had been cured or relieved, and 193 were still on the books. The average daily number of in-patients was 24·73, and the average stay of each patient was 20·91 days. In addition, 585 casualties were treated. Although the in-patients were 46 more than the previous year, the maintenance only marked an increase of £19, showing that great economy was exercised. The total deficit was now £284. Regret was expressed at the resignation through pressure of other work of Dr. C. H. Bryant as hon. ophthalmic surgeon, and it was announced that Lieut.-Colonel H. Herbert, F.R.C.S., had been appointed his successor. It was agreed that the hospital year in future should end on Dec. 31st.

ST. GEORGE'S HOSPITAL MEDICAL SCHOOL.—The winter session will be opened on Oct. 2nd, when an inaugural address will be delivered by Sir Clifford Allbutt at the school.

LONDON (R.F.H.) SCHOOL OF MEDICINE FOR WOMEN. The opening of the winter session will take place on Monday, Oct. 2nd, at 8, Hunter-street, Brunswick-square, London, W.C. 1, at 3 P.M., when the introductory address will be given by Lord Burnham.

LLANDRINDOD WELLS MEDICAL GOLF TOURNAMENT. This tournament has now been brought to a successful conclusion. The weather was good throughout the competition. Dr. F. C. Hunot (Pennard) and Dr. H. Baird (St. Leonards) were the finalists, the former winning on the last green.

THE LATE DR. R. F. WILLIAMSON.—The death took place on Sept. 19th at Abbot's Bay, Penrith, Cumberland, of Dr. Richard Frederick Williamson, who graduated M.B., C.M. at Edinburgh in 1881. He had been acting as locum tenens, and while visiting patients was taken ill in his motor-car. Death was due to angina pectoris.

MANCHESTER ROYAL INFIRMARY.—The post-graduate lectures and demonstrations on medical, surgical, and special subjects given by the honorary staff will be resumed on Oct. 3rd, when Dr. A. Ramsbottom will lecture at 4.15 P.M. on Pulmonary Tuberculosis. Further lectures will be held on Tuesdays each week (with the exception of Dec. 26th, Jan. 2nd and 9th, and April 3rd) till May 15th, 1923, and will be announced in our Medical Diary. Dr. E. S. Reynolds will give six lectures on Nervous Disease on Fridays, commencing Oct. 6th.

ST. MARY'S HOSPITAL WEEK-END POST-GRADUATE COURSE.—In connexion with the annual dinner of St. Mary's Hospital past and present students, which takes place on Oct. 2nd at the Connaught Rooms, Holborn, at 7 for 7.30, under the presidency of Sir Leonard Rogers, a short informal post-graduate course has been arranged for this week-end at the hospital. Mr. T. G. Stevens will give the opening lecture to-day, Saturday, Sept. 30th, from 10 to 10.45 A.M., on Disorders Associated with the Menopause. At 10.45 A.M. Mr. A. W. Bourne will lecture on Uterine Hæmorrhage in the Absence of Physical Signs. At 12 noon Sir William Willcox will deal with Arthritis. In the afternoon, at 2.30, Dr. C. M. Wilson will discuss the Clinical Application of Biochemistry (1) in Jaundice, (2) in Diabetes, and at 3.45 Mr. V. Zachary Cope will call attention to Neglected Symptoms in Acute Abdominal Disease. On Sunday, Oct. 1st, Dr. J. Freeman will lecture at 10.30 A.M. on Modern Methods of Investigating Asthma, and at 11.30 will open a discussion on Streptococcal Infections. On Monday, Oct. 2nd, Prof. C. A. Pannett will give an illustrated lecture on the Investigation of Right-sided Abdominal Pain at 10 A.M., followed at 10.45 A.M. by a discourse on the Use and Abuse of Organo-Therapy, by Prof. F. Langmead; at 12 a lecture entitled Chronic Lobular Mastitis and its Relation to Scirrhus of the Breast will be delivered by Mr. V. Warren Low. In the afternoon, at 2.30, Dr. C. M. Wilson will discuss Applied Biochemistry, with special reference to renal efficiency tests and basal metabolic measurements. These meetings are open to all medical practitioners without fee, and according to *St. Mary's Hospital Gazette* for October the modest scope of the course may be extended another year should the meetings prove popular.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Capt. F. W. Parker is placed on the retired list with rank of Surg. Rear-Admiral.

ROYAL ARMY MEDICAL CORPS.

Col. D. J. Collins, late R.A.M.C., to be Maj.-Gen., vice Maj.-Gen. Sir George B. Stanistreet.

Lt.-Col. (temp. Col.) E. T. Inkson, V.C., from R.A.M.C., to be Col., vice Col. D. J. Collins.

Maj. T. J. Potter is placed on the half-pay list on account of ill-health contracted on active service.

Capt. J. H. Boag retires, receiving a gratuity.

Temp. Capt. F. W. Harlow relinquishes his commn. and retains the rank of Capt.

ARMY DENTAL CORPS.

Temp. Capts., Dental Surgs., from Gen. List, to be Capts.: E. S. Dickin and J. McLean Foreman.

Temp. Capt. J. J. Breakell relinquishes his commn. on ceasing to be employed as a Dental Surg. and retains the rank of Capt.

TERRITORIAL ARMY.

The following officers, having attained the age limit, are retired with their rank except where otherwise stated: Lt.-Cols. J. Howard-Jones and E. C. Stack; Maj. (Bt. Lt.-Col.) H. A. Leebody (granted the rank of Col.); Capts. C. G. Murray (granted the rank of Maj.), H. Mills, and W. Sankey.

ROYAL AIR FORCE.

Flight Lt. J. Paxton relinquishes his temp. commn. on ceasing to be employed.

INDIAN MEDICAL SERVICE.

Maj. G. A. Jolly to be Lt.-Col.

The King has approved the resignation of Capt. G. A. S. Ramsay.

Capts. Indra Datt Gupta and Shiva Narain Govill retire with the rank of Capt.; and Bola Dayanand Rao relinquishes his temp. commn.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, Oct. 3rd.

ORTHOPÆDICS: at 5.30 P.M. (Cases at 5 P.M.)
Presidential Address:
Mr. T. H. Openshaw: Traumatic Spondylitis.
Cases will also be shown.

Thursday, Oct. 5th.

OBSTETRICS AND GYNÆCOLOGY: at 8 P.M.
Specimen:
Dr. Arthur E. Giles: Large fibroid developing in the cervical stump after sub-total hysterectomy.
Papers:
Dr. Arthur E. Giles: Indications and Results of Myomectomy in the Treatment of Uterine Fibroids.
Mr. Victor Bonney: On the Scope of Myomectomy and the Technique of the Operation.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.
THURSDAY, Oct. 5th.—5 P.M., Dr. W. Griffith: Chesterfield Lecture, The Elementary Lesions of Skin Diseases.

NORTH-EAST LONDON CLINICAL SOCIETY, Prince of Wales's Hospital, Tottenham, N.
THURSDAY, Oct. 5th.—4.15 P.M., Sir Archibald Reid: The X Ray Examination of the Pyloric End of the Stomach and its Vicinity. (Lantern lecture.)

LONDON LOCK HOSPITAL, 91, Dean-street, W., and 283, Harrow-road, W.
MONDAY, Oct. 2nd.—5 P.M. (Dean-street), Mr. Charles Gibbs: Anterior and Posterior Urethritis.
WEDNESDAY.—3 P.M. (Harrow-road), Mr. E. Lane: Ante- and Post-Natal Syphilis. 5 P.M. (Dean-street), Mr. F. Juler: The Commoner External Venereal Diseases of the Eye.

RADCLIFFE INFIRMARY (OXFORD) POST-GRADUATE COURSE.
MONDAY, Oct. 2nd, to Saturday, Oct. 7th.—Morning and afternoon, Dr. Bevers, Dr. Collier, senr., Mr. Dodds-Parker, Sir A. Garrod, Dr. Gibson, Mr. Girdlestone, Dr. Good, Prof. Gunn, Dr. Mallam, Dr. Turrell, Dr. Waters, and Mr. Whitelocke, senr.: Papers, Discussions, and Demonstrations.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.
TUESDAY, Oct. 3rd.—4.15 P.M., Dr. A. Ramsbottom: Pulmonary Tuberculosis.
FRIDAY.—4.15 P.M., Dr. E. S. Reynolds: Brain Tumour.

Appointments.

HARRIS, W. T. J., M.B., Ch.M., has been appointed District Resident Medical Officer at Queen Charlotte's Lying-in Hospital.

HEIF, F. R. G., M.R.C.S., L.R.C.P. Lond., M.B., B.Ch., Medical Superintendent of the Warwickshire King Edward VII. Memorial Sanatorium.

MACNAB, R. A., M.B., B.Ch., Junior Assistant Medical Officer at the Holloway Sanatorium, Virginia Water.

O'CONNOR, J. F., M.B., B.Ch., B.A.O. N.U.I., Medical Superintendent of the Infirmary and Medical Officer of the Workhouse, Ashton-under-Lyne.

PINTO-LEITE, H., M.R.C.S., L.R.C.P. Lond., Anæsthetist to the Royal Dental Hospital, Leicester-square.

North Lonsdale Hospital:—House Surgeons: ROBERTS, L. J., M.R.C.S., L.R.C.P., and LUCAS, S. L., M.B., Ch.B.

Certifying Surgeons under the Factory and Workshop Acts: PATCHETT, L., L.R.C.P. & S. Edin., L.R.F.P.S. Glasg.: (Ribchester); ROBERTSON, D., M.B., Ch.B. Edin. (Longtown).

Vacancies.

For further information refer to the advertisement columns.

Chelmsford Borough.—M.O.H. and School M.O. £700.
Epsom, Surrey, London County Mental Hospital, Horton.—Asst. M.O. Six guineas weekly.
Evelina Hospital for Children, Southwark, S.E.—Hon. P.
Gateshead Mental Hospital, Stannington, Newcastle-on-Tyne.—Asst. M.O. £400.
Hampstead General and North-West London Hospital, Haverstock Hill, N.W.—Surg. to Out-patients and Two Phys. to Out-patients.
Hong-Kong University.—Prof. of Med. £800.
Hospital for Epilepsy and Paralysis, Maida Vale, W.—Hon. Gynæcologist.
Hospital for Sick Children, Great Ormond-street, W.C.—H.S. and H.P. Each £50.
Hospital of St. John and St. Elizabeth, 40, Grove End-road, N.W.—Bacteriologist and Pathologist. 50 guineas.
Huddersfield Royal Infirmary.—Jun. H.S. £200.
Hull Royal Infirmary.—Hon. Radiographer.
Ipswich, East Suffolk and Ipswich Hospital.—H.S. £150. Also Gen. S. on Visiting Staff.
Isle of Wight County Council.—County M.O. £1000.
Italian Hospital, Queen-square, W.C.—Hon. S. to Throat, &c. Dept.
Leavesden Mental Hospital, King's Langley, Herts.—Med. Supt. £800.
London Homœopathic Hospital, Great Ormond-street, W.C.—Third Anæsth. £50.
Manchester Babies' Hospital, Burnaye Lane, Levenshulme.—Res. M.O. £150.
Manchester, Monsall Fever Hospital.—Second and Third Asst. M.O.'s £300 and £250.
Paddington Green Children's Hospital, W.—H.P. and H.S. Each £150. Also P. to Skin Dept.
Prince of Wales's General Hospital, Tottenham, N.—Hon. Anæsthetist. £20.
Queen Mary's Hospital for the East End, Stratford, E.—Res. M.O. £300.
Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Two H.P.'s and Asst. Cas. H.S. Each £100.
Royal Free Hospital, Gray's Inn-road, W.C.—Asst. Anæsth. £100. Asst. S. to Ear, Nose, &c. Dept. Cas. O. £100.
Royal National Orthopædic Hospital, 234, Great Portland-street, W.—Two Hon. Radiologists.
Sheffield Royal Infirmary.—Asst. Cas. O. £150.
Southampton County Borough.—School Dentist. £500.
South London Hospital for Women, Clapham Common, S.W.—Temp. Asst. P.
South Mimms, Barnet, Clare Hall Sanatorium.—Asst. M.O. £350.
Sunderland Royal Infirmary.—H.P. and H.S. Each £200.
Swansea County Borough.—Female Asst. M.O. £500.
West Riding of Yorkshire County Council.—Tub. O. £750.
Whitechapel Infirmary, Vallance-road, E.—Asst. M.O. £400.

The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointments:—Dawley (Salop), Nottingham West (Nottingham), Burnley North (Lancaster), Stroud (Gloucester), and Neath.

Births, Marriages, and Deaths.

BIRTHS.

COLDWELL.—On Sept. 18th, at "Chalgrove," Peterborough-road, Harrow, the wife of Dr. W. Herbert Coldwell, of a son.

ELVERY.—On Sept. 16th, at Yeovil, the wife of Major P. G. M. Elvery, D.S.O., M.C., R.A.M.C., of a son.

MARRIAGES.

CLARKE—TOWERS.—On Sept. 19th, at Emmanuel Church, Carnforth, by the father of the bride, Geoffrey Clarke, M.D., to Mary, younger daughter of the Rev. W. H. and Mrs. Towers, of Mansefield, Bolton-le-Sands.

MANNIX—BICKET.—On Sept. 20th, at St. James, Spanish-place, London, Captain Edward Mannix, R.A.M.C., to Agnes, daughter of Sir Alexander and Lady Bicket, of Aigburth Drive, Liverpool.

DEATHS.

HODDER.—On Sept. 23rd Francis Edward Hodder, L.R.C.S.Edin.

NARBETH.—On Sunday, Sept. 17th, at the Clinique des Alpes, Grenoble, France, after a delayed operation for appendicitis, Christopher Wesley Narbeth, M.B., B.S., M.R.C.S., L.R.C.P., D.P.H., at the age of 24.

TOBIN.—On Sept. 20th, at Enniskillen, as the result of an accident while riding, Major W. J. Tobin, R.A.M.C.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE DIAGNOSIS OF MORAL IMBECILITY.

BY HENRY HERD, M.B., CH.B.EDIN.,
SENIOR ASSISTANT SCHOOL MEDICAL INSPECTOR, MANCHESTER.

THE difficulties that arise in the diagnosis of mental deficiency on the intelligence side are small in comparison with those that meet the certifying officer when he has to determine whether the moral or legal delinquencies of the subject before him amount to what may be regarded as a "defect" on the moral side, and his difficulties are increased by the ambiguity of the official definition of this class in the Mental Deficiency Act. "Moral imbeciles," as they are most ineptly named, are there defined as "persons, who from an early age, display some permanent mental defect coupled with strong vicious or criminal propensities, on which punishment has had little or no deterrent effect."

Definitions in the Mental Deficiency Act.

The obvious objection to the use of the word "imbecile" in this connexion may be passed over. Nor need we tarry over the word "persons." It has been suggested that the specific reference to "children" in the definitions of "imbeciles" and "feeble-minded persons," and the absence of such a reference in the case of the "moral imbecile" carries the implication that children should not be certified as "moral imbeciles." But, as the same omission occurs in the definition of the "idiot," and as one would not hesitate to certify an obviously idiot child, this inference is scarcely justified, and in any case, quite apart from this merely technical point, an abundance of other reasons can be found to cause hesitation at least in the certification of a child as a "moral imbecile."

Most of the controversy on this subject has arisen over the words "mental defect," for usually those persons whom we feel most disposed to certify as "moral imbeciles" are persons whose intelligence shows little or no indication of "defect." And, in fact, if defect of intelligence is quite plainly present in cases showing "strong vicious and criminal propensities," then there appears to be no necessity to have a separate term for them; if they are feeble-minded let them be certified as "feeble-minded," whatever their behaviour. It is not uncommon, however, for cases to be certified "moral imbeciles," who are really "feeble-minded," and Dr. M. W. Barr, in his most recent book, "Types of Mental Deficiency," virtually sanctions this policy, for in quite a large proportion of the cases classed as "moral imbeciles" by him, the detailed description given reveals their intelligence defect quite clearly—some of them, indeed, are nearly imbecile in intelligence.

But the word "mental" as used in this definition may be used in the wider sense which the word usually bears or ought to bear. It covers a great deal more than intelligence. A man's mind includes his own personal qualities of initiative, energy, will-power, his powers of intuition—for many successful men owe their success not to exceptional intelligence, but to brilliancy of intuition—his instinctive and impulsive tendencies, his sentiments for justice, truth, duty, and that most important characteristic of rational and moral self-control. Defect in one or more of these qualities may be vastly more important than mere defect in intelligence.

Meaning of the Term "Moral Sense."

When we turn to the text-books for help, we find in use in the description of moral imbeciles a term which is unknown to the Act—viz., the term "moral sense," and we are generally told that lack of moral sense is the distinguishing characteristic of the moral imbecile. But when we seek for a definition of this term we find considerable ambiguity. Three different usages of the term appear to be prevalent either separately or (what is worse) in combination.

(1) It is sometimes used as meaning the inborn capacity to develop an appreciation of right and wrong. That is to say, that in relation to appreciation of moral distinctions, as well as to other mental acquisitions, the mind is not a "tabula rasa" as Locke conceived it.

(2) It is rather more frequently taken to mean the more or less completely developed sense of right and wrong that arises out of that capacity. Moral sense, in this meaning of the term, is a gradually acquired thing, a "sense" which the child develops as the result of home training, contact with the outside world in school and out of school, and the reactions of these upon his offences in the form of punishment or disapproval. It is a *knowledge*—at first a concrete knowledge of what are right actions and what are wrong actions, gradually becoming more abstract, so that in time the person becomes capable of applying this knowledge to new situations. Moral sense, therefore, in this meaning is relative to the prevalent moral ideas, a reflection of our environment, though in later years our own thinking may develop it in directions contrary to the commonly accepted moral ideas.

(3) Obviously these two usages of the term "moral sense" are closely related, for if a man lacks in the capacity to develop moral appreciation, then he will not develop it in concrete form, and it is only by its concrete manifestations that we can judge of the existence of the capacity. But there is still another usage of the term in which it is applied to the motive force within us which compels us to do the right and refrain from the wrong—or, to use the language of the "new" psychologist, the "sentiment" for morality that develops in every normal human being and gives him the "desire" for the right. It is quite obvious that a man may have a "moral sense" in either of the first two meanings, but be quite or nearly without it in the last meaning. It is true that normally moral knowledge and a sentiment for morality grow up together, but there is no necessary connexion between them, and a man may have a quite satisfactory knowledge of what is honest and what is just and what is true, and yet fail to develop that love of honesty and justice and truth which are essential if he is to follow the light of that knowledge—if, that is, his actions are to be guided by anything higher than a mere fear of punishment or social ostracism. It is to this "sentiment" for morality, combined doubtless with prudential considerations, that we owe that sense of obligation that normally constituted persons are conscious of.

Lack of Knowledge or Ethical Sense.

In some of the text-books these meanings of the word "moral sense" are confused. Even Dr. A. F. Tredgold, who has written most clearly and logically on this subject, appears to me to confuse, or rather to combine these meanings. At one point he speaks of "moral sense" quite definitely as a "capacity to appreciate the difference between right and wrong"; at another he includes under the term the ability of a man to "realise that certain obligations are due from him to the society of which he is a member. He must now," he adds, "not merely eschew the wrong but do the right." But that is an entirely different thing. The first is a knowledge; the second is an ethical impulse to action.

Taking now the second of these three meanings, which we may designate "moral knowledge," it is clear that the growth of this is essentially dependent upon intelligence. It depends on observation, perception, memory, judgment, reasoning, just as other knowledge and the ability to apply that knowledge do. Lack of "moral sense" in this meaning is a "mental defect." No man of intelligence can fail to develop this "sense"; if his training, of course, is immoral in its tendencies, it will be a distorted moral sense, but that does not alter the general fact. It is in the feeble-minded that we find failure in development here; in proportion to their lack of intelligence is their lack of "moral sense," and if they do not commit offences—and often they do not—it is only because they happen to have a good environment, and in virtue of their feeble-mindedness they are eminently suggestible and sensitive to the tone of that environment.

But does the "moral imbecile" lack this "moral sense," or, rather, moral knowledge? Judged by his actions, it may appear that he does, but proof is almost impossible, and it is not uncommon to find that quite a hardened anti-social offender of this type knows quite well that he is doing wrong. In three of his recorded cases of moral imbecility, Dr. Barr specifically refers to their perfect appreciation of right and wrong. What they really lacked was "moral sense" in the third meaning: there was no stimulus within them to moral action.

Faulty Inborn Mental Structure.

The source of this sentiment for morality is to be found in the inborn mental structure of man, in the hereditary instincts and their accompanying emotions. Some of these instincts tend towards the advantage of self, others to that of "our neighbour"—the social instincts. We are not by nature egoists alone, however much the manifestations of egoism appear at times to predominate, but even by nature we have altruistic tendencies. From these as a nucleus, as a reaction to environment, certain sentiments—loves and hates chiefly—develop, firstly, for persons in our environment, later abstract sentiments for moral principles and ideals, and the instincts become attached as motive forces to these sentiments.

The fundamental weakness of the person described as the "moral imbecile" appears to be that he is endowed by nature with preternaturally strong selfish instincts and probably also with abnormally weak altruistic instincts, as the result of which higher sentiments are poorly developed—he is seldom, for example, a lover of his kind, even of his nearest kinsmen, and he fails to develop any sentiment for moral virtues or ideals—so that he becomes a persistent liar, a persistent thief, is persistently cruel, passionate and vindictive—even it would seem against his own interests—

is, in fact, the prey of irresistible impulses towards wrong-doing. Even punishment will not deter him from his evil courses; the instinctive fear of consequences appears to weigh little in the moral balance against the other impulses.

Dr. Tredgold, following the late Dr. Mercier, has suggested that in moral imbeciles, besides lack of moral sense, there is an absence of wisdom which is described as a "faculty which enables the possessor to look beyond the needs of the day and make plans for the future, to forgo present gratification for the sake of future advantage"—an intellectual faculty, that is, as Dr. Tredgold declares it to be. But when one thinks of the highly intellectual men who have been "moral imbeciles," one cannot conceive that they were lacking in this capacity for foresight, and one is compelled to conclude that it is not the intellectual side of their mind that is at fault, but the willing side, the active agency. Dr. Tredgold gets over the difficulty of the statutory definition by interpreting the words "mental defect" in the sense of this lack of "wisdom," thus clinging still to the idea that a "mental defect" is "intellectual." This, as has been already indicated, is an unreasonably narrow interpretation of the word "mental"; abnormality on the instinctive side is quite as definitely entitled to rank as a mental defect.

Some modification of the definition of the Act is obviously necessary to clear away the ambiguity. It might quite reasonably be contended that the present definition of the feeble-minded covers this class, inasmuch as they are persons who require "care, supervision, and control for their own protection or for the protection of others," but as these cases should be separately dealt with in treatment it is probably more convenient to have a separate definition. The writer ventures to suggest that they should be called "morally defective persons" and defined as "persons who, from an early age, display irremediable instability of character or inability to control instinctive impulses to such an extent as to constitute by their vicious and criminal behaviour a danger to others so great that care, supervision, and control are necessary."

Remediable or Irremediable.

The use of the word "irremediable" serves to make prominent the fact that many cases in which a diagnosis of "moral imbecility" has seemed the only possible one, or has actually been made—cases in which the delinquencies date "from an early age"—have ultimately proved not to be permanent. They have, in fact, yielded to psycho-therapeutic treatment, or in some cases apparently to no definite treatment at all, or, as in two cases known to the writer, have recovered after a temporary residence in an institution. In the definition of the Act "punishment" is the only kind of remedial treatment that is mentioned—a reflex, we assume, of the comfortable delusion, so remarkably prevalent, that punishment is the one suitable and effective method for dealing with all forms of naughtiness, individual or national. But a case that is irremediable by punishment is not necessarily irremediable by other and saner methods.

The line separating the "moral imbecile" from the more or less normal person is not easy to place. An analogous difficulty arises in the differentiation of the mentally defective from the normal. The mentally defective on the intelligence side is not separated by any definite borderline from the normal child—at least if we make a border line, it is only an artificial one. Grades of intelligence are like the colours of the spectrum: they shade into one another: at one end there is the super-normal and at the other end the idiot with the normal, the subnormal, the feeble-minded and the imbecile between, with a very indefinite border separating each from its neighbour. Now in a somewhat similar way we can conceive of the so-called moral imbecile as but an extreme grade of a type of which we can find lesser varieties shading off into the normal—a type variously named—highly emotional, with all or nearly all the emotions in intense degree, though it may be short in duration and lacking in depth, whether it be anger, joy or sorrow, affection, self-assertiveness or its opposite—impulsive excitable types—types that tend to become rebels, that are often rebels in spirit and in words if not in action against established traditions, and especially if their environment is unfavourable to the direction of their impulses. Ill-balanced or unstable, we usually call them, but sometimes this instability is repressed and not at first obvious, bottled up, and all the more dangerous and explosive because of that repression. The typical moral imbecile, as usually described, is essentially of this uncontrolled type but of an extreme degree, but I need scarcely say also that while antisocial offences are made a criterion in the definition of the Act, mental instability may be of a dangerous degree without actual delinquency resulting.

Psychology of Delinquency.

Recent psychology has shed a flood of light on the possible causes of delinquency. That environment, home, and the general social surroundings and conditions of living played a large part in causation was fairly obvious, but investigators like Dr. W. Healy, of Chicago, and psycho-analysts in many countries have shown that the root cause may not always lie in the immediately obvious environment, nor (as Dr. Healy has convincingly shown) in heredity alone, but in some inner reaction of the individual mind to the environment, of which the person himself is often quite unconscious. The result is a concealed "mental conflict" or some form of "complex"—conflicts and complexes which drive him irresistibly to some action or series of actions utterly contrary to his interests and to the tendencies of his rational and conscious self. The persons liable to such conflicts are usually of the unstable type. Cases where the delinquency is traceable to an "inferiority" complex appear to be not uncommon. In one of these, under the writer's observation, the unconscious sense of inferiority appears to have been fostered by a crippling paralysis which kept the boy for some years away from the companionship of his fellows and, owing to home circumstances, shut up in a room for hours together daily by himself. Such "inferiority" complexes arise sometimes in cases of marked backwardness in school attainments. "Sex complexes" take many forms, such as the withholding of sex knowledge, or the learning of bad sex habits from older children. Secrets of family relationships guarded from the children appear to be by no means an infrequent source of trouble. In a recent case, the boy, who has had a stepmother since he was ten months old, but has been brought up to believe she is his real mother, discovered from an outside source over two years ago that he had been deceived, and his delinquencies—frequent stealing even of valuable articles, destructiveness (a gold watch, e.g.), cruelty to younger children—date from then, his father and stepmother having been foolish enough to evade the issue and leave the "conflict" in the child's mind. Such a case is, of course, simple and the remedy obvious, but there are many in which probably only a very thorough psycho-analytic procedure would be efficient both for diagnosis and for treatment, and this is not always easy, nor always desirable in the case of children.

What is perfectly clear is that the farther we push our inquiries in such cases—cases, that is, of chronic delinquency—into family history, home environment, general social surroundings and conditions, and the farther we proceed either by ordinary cross-examination or by more complex psycho-analytic methods to inquire into the workings of the person's mind, the more we shall hesitate to make a diagnosis of moral imbecility, and particularly so in the case of children. In the case of adults, the effects of the habit of criminality persisting over a period of years reinforce the underlying cause or causes, and may, therefore, lead to the condition being "irremediable." But a large proportion of these cases may, we consider, be regarded as "psycho-neuroses," just as hysteria and neurasthenia are, and as such remediable by some form of psycho-therapeutic treatment. Cases actually certified for institutional care have been cured by suggestion treatment. One does not deny of course, that institutional care may be necessary for many of these cases, especially where home conditions are at fault and where parents are not sufficiently intelligent to appreciate what is necessary on their part in treatment; but such institutional care must be definitely curative on modern lines for the sake of the individual himself, and not merely segregative for the sake of the community. One essential feature of all treatment, obviously, is the sublimation of the offending instincts, so that they find an outlet for their energy in useful and harmless activities.

Diagnosis in Haste.

Dr. Healy frankly declares that he has failed to find a moral inbecile. Dr. W. A. Potts has said that such a diagnosis is a "cloak for ignorance." The term has been used in the past too freely to cover a multitude of sins, and the wisest course for a school medical officer to adopt with a case of abnormal moral behaviour in a child of school age is to let moral imbecility be the last possible diagnosis he considers, if indeed he considers it at all.

Cases of feeble-mindedness accompanied by evidence of criminal propensities are, as already suggested, properly classified as "feeble-minded," but it should not be forgotten that their intelligence deficiency is not necessarily the cause of their moral obliquities, though it may determine the foolishness of their methods. Such offences may have subconscious or other origins just as in the case of persons of normal intelligence. A child of ten in one of our special schools has committed several thefts partly from a desire—subconscious mostly—to please her teacher, partly in unconscious imitation of a parental habit. Such cases, however, are best dealt with in institutions for the feeble-minded, where the constant suggestion of better methods of behaviour has an almost unfailing effect upon the defective and eminently suggestible mind.

COLONIAL HEALTH REPORTS.

Northern Territories of the Gold Coast.

A DELAYED report for the year 1919 has been issued over the signature of Captain C. H. Armitage, C.M.G., D.S.O., Chief Commissioner. It states that during the year there were no deaths among the European officials, and that only 17 were placed on the sick list for periods varying from two to 45 days. There were no deaths or invalidings among the native officials. The Census completed in 1919 gave an estimated native population of 361,860, an average of 11·6 persons to the square mile, but it is probable that in one of the provinces (the North-Eastern) not more than two-thirds of the inhabitants were enumerated. The general health in the Southern Province was good. Influenza continued its ravages in the North-Eastern Province up to the month of April. The deaths recorded totalled 18,263, but are thought to have been much greater in reality, for in many cases children were not included in the returns, while the true number of deaths at villages was sometimes withheld on account of the superstitious fears of the natives. Infant mortality is very high, as is the case in adolescence. In the Navarro-Zouaragu districts alone it is recorded that of 8856 children born and alive at 5 years of age only 2912 survived after 10 years. In the North-Western Province, in addition to the influenza scourge, a serious epidemic of cerebro-spinal fever occurred in the Lorha district; deaths from this disease are said to have totalled 1000. Small-pox broke out in the village of Olo, but the chiefs reported this with such promptitude that the village was isolated before the disease had time to spread. Leprosy is not on the increase, and, while uncommon in the Southern and North-Western Provinces, is of more frequent occurrence in the North-Eastern Province. The natives look upon it as "a visitation of Allah" and are generally averse to compulsory isolation. There are Government native hospitals established at Tamale, Salaga, and Bole in the Southern Province; at Wa, Tumu, and Lorha in the North-Western and at Gambaga and Zouaragu in the North-Eastern Provinces, but as the medical officers at Wa and Gambaga are constantly travelling these buildings are seldom occupied. The first two hospitals mentioned are permanent buildings; the others are built of "swish" or sun-baked bricks, and are thatch-roofed; little if any advantage is taken of them by the natives where medical officers are not in residence. The old men, especially those living in the Northern Provinces, continue to be a thorn in the flesh of the administration. They live in the past, oblivious of the miseries that they endured in their youth and before the advent of the white man, and remembering only the fact that every man was a law unto himself and could murder, rape, and loot with impunity so long as he was strong enough to protect himself. They retain a fanatical hatred for the chiefs, whose rapidly growing authority is repugnant to them, and do all in their power to undermine it and to prevent the youth of the country from getting into touch with civilisation. Strangely enough the influenza passed by these reactionaries of a past generation, who are, however, slowly dying out. The climate of the Northern territories, while similar to that of the Gold Coast and Ashanti, may be said, in comparison with them, to be more trying in its extremes. It possesses an insidious quality that lowers the vitality of Europeans and renders unduly prolonged residence on their part inadvisable; it is generally recognised that a period of recuperation in a more bracing and salubrious climate is necessary after a year's stay in the country.

The 1920 Report.—Since the above was in type the report on the territories for the year 1920 has been received. It has been prepared by Mr. Arthur James Philbrick, LL.B., the new chief commissioner, and includes a statement to the effect that the Protectorate is understaffed with medical officers. The population, it is believed, continues to increase. Cerebro-spinal fever is now held to be endemic, appearing annually in the dry season.

Sierra Leone.

According to the report for 1920, the estimated population of the Protectorate is 1,327,560. The population of the colony (as distinguished from the Protectorate) was at the Census of 1911 75,572. The number of births registered in 1920 was 1501, or 20 per 1000, and of deaths 2058, or 27 per 1000. The excess of deaths over births, however, cannot be depended on. Registration of births and deaths is nominally compulsory in Freetown and the colony, but while the registration of deaths is probably correct, as bodies have to be buried, the registration of births is not accurate. There is a large population of Protectorate natives living in Freetown and the colony, many of whom will not trouble to register the births of children. The number of European and American residents in 1920 was 1028, made up of 233 officials, 300 non-officials, and 495 military.

Cyprus.

A census was taken in April, 1921, showing the population to be 310,709, an increase of 36,529 over the census of 1911. Approximately one-fifth of the people are Mohammedans, the bulk of the remainder being Greek Christians of the Autocephalous Church of Cyprus. The public health in 1921 was again good, the stringent quarantine regulations in force having proved effectual in preventing the introduction into the island of plague, typhus, and other virulent diseases prevalent in most neighbouring countries of the Levant and Near East. Cyprus is also free from rabies, and the regulations prohibiting the importation of dogs continue to be strictly enforced. The prevailing diseases were, as in the previous year, those of the digestive and respiratory systems, influenza, diseases of the skin, rheumatism, enteric fever, and malaria. As heretofore an active campaign against malaria was conducted under the supervision of the medical officer of health. Since the inauguration of the anti-malarial campaign in 1913 over 1000 acres of marsh land have been reclaimed, of which some 500 acres are now under cultivation. The births registered during 1921 were in the proportion of 26·6 to 1000 of the population, and the deaths 19·8 per 1000. The rate of infant mortality was 130·4 per 1000. There are Government maintained or aided hospitals in the six principal towns, and 14 rural medical officers, each with his headquarters and a Government dispensary at a central station, worked among the village populations. Nearly 1200 patients were admitted to the Central Hospital at Nicosia, and the out-patients treated at that institution numbered 8632. Over 200 surgical operations were performed. The average number of inmates in the lunatic asylum at Nicosia was under 100. The number of lepers at the Leper Farm averaged about 70—the lowest on record. The beneficial effect of segregation is beginning to tell, and there is a good prospect of stamping out the disease in Cyprus before long. At the close of the year the number of children in the home for healthy children of lepers was 11, all of whom remained free from any sign of the disease. The climate of Cyprus is, generally speaking, temperate and healthy, though the excessive heat of the plains during the summer is trying to Europeans. The heat is, however, dry, except on the coast. The winters are cold and bracing. The mean temperature at Nicosia in 1921 was 64·80° F., or 0·85° below the average. The mean maximum temperature during the year was 75·9° and the mean minimum 53·7° The mean rainfall for the whole island was 22·44 inches. There was a heavy fall of snow throughout the island on Feb. 23rd–24th, and a slight earthquake shock was felt at Limassol on Dec. 31st. The experience of the last few years would seem to indicate that the climate of Cyprus is slowly but surely changing. While the excessive heat in the plains is still prevalent during midsummer, the winters are tending to become colder and late rains to fall during May and June, or two months after the close of the normal rainy season.

GOATS AND EPIZOÖTIC ABORTION IN CATTLE.

To the Editor of THE LANCET.

SIR,—As a result of the note you published in THE LANCET of Sept. 2nd (p. 546) I have had from friends three different explanations of how goats protect cows from epizoötic abortion. In Dorset it is thought that the goats eat some (unspecified) plant which encourages or causes abortion. In Essex and Roxburgh billy goats alone are held to be of use. In the former the goat is kept tethered near the house, with the idea that the cows dislike his society and smell and hence keep away from the always foul ground round the farm buildings and thus run less risk of infection. In Scotland, on the other hand, the goat runs loose with the cattle, but only if a bull is with them; if the bull becomes amorous, the goat, with his characteristic lechery, interferes; it is, I believe, generally agreed that infection is often transmitted by the bull. The custom prevails also in Northumberland.

Whatever the explanation, the custom is evidently widespread, though whether there is any more cogent evidence that it is effective I do not know. After losing their first calf from the disease, cows are often apparently protected, and it is a natural supposition that the goat conveys some form of infection to the cows which has a similar immunising power. The bacteriological identity of *Bacillus abortus* and *Micrococcus melitensis* (using the familiar names) is dealt with by Khaled[1]; the organisms are indistinguishable by cultural and serological methods, and, with less certainty, will protect against one another. They differ in that one causes abortion in cattle and the other Malta fever in man, and epidemiologically these seem to be distinct diseases without any constant relation to one another. With a few exceptions, in which infection from goats cannot be altogether excluded, Malta fever in man does not originate in places—e.g., Britain and America—in which abortion is prevalent. It would be interesting to know if cultures of *M. melitensis*

[1] Journal of Hygiene, xx., 319.

of typical human origin would start an epidemic of abortion in a clean herd (if such exists). The goat is notorious as the great reservoir of Malta fever round the Mediterranean and over an area which has been continually extended as infection has been looked for. Whether goats in this country have been or are infected seems doubtful. It is very likely that they were in the days when their free importation from the continent was allowed, and Damant and I[2] found agglutinins in a few animals, though we could not isolate the organism. As a working hypothesis it might be supposed that goats immunise (or used to immunise) the cattle against abortion by dosing them with Malta fever, the two organisms having the same intimate relationships with one another as have those of pseudo-tubercle of guinea-pigs and plague.

Alternatively, of course, there is the possibility that the whole thing is merely an application of the idea that Pan has a special protective action over the lives and fertility of flocks and herds.—I am, Sir, yours faithfully,

A. E. BOYCOTT.

Medical School, University College Hospital, W.C.,
Sept. 26th, 1922.

THE HABITS OF BRITISH MOSQUITOES.

MUCH information is still required concerning the mating and other habits of several species of British mosquitoes and the Mosquito Investigation Committee of the South-Eastern Union of Scientific Societies invites help in obtaining it. The points requiring elucidation are whether *Anopheles plumbeus* has ever been known to pair in captivity, whether its eggs are ever laid on the damp marginal mud or on the water, whether dancing in the air has been observed, and so forth. Observations throwing light upon the question whether aerial dances are a necessary prelude to mating are particularly desired, and various other details with regard to the conditions of mating of mosquitoes and midges. Further particulars as to the form in which information should be supplied can be obtained from the hon. sec., Rev. T. W. Oswald-Hicks, at "Lesware," Linden-road, London, N. 15.

A SANITARY PRIVY SEAT-COVER.

ACCIDENTAL infection from the use of unclean public conveniences may not be very frequent, but it certainly does occur, and the risk is all the greater when the wooden rim of the seat is not interrupted in front as it should be. The "White Star" hygienic seat-cover has been introduced by Messrs. Vickers-Massey, Ltd., Sentinel House, Southampton-row, London, W.C. 1, to avoid the risk from a soiled seat by covering it with a fresh layer of clean paper for each user. A mahogany case with hinged flap contains 100 sheets of pure thin paper which are drawn forward singly, as required, to cover the seat before using. The sheet is simply detached and flushed away after use. The advantages claimed for this contrivance are that there is no mechanism to get out of order, that it occupies a minimum of space, and since only a single tab presents itself when the flap is lifted only one sheet of paper can be drawn forward at a time. The sheet completely protects the seat and has a special flap in front. The cabinet protects the unused sheets from being soiled or moistened. It is installed on the principle of an inclusive fee of 1s. a week to cover 2500 sheets of paper per annum.

FOUR SANATORIUM LECTURES.

ONE of the most important functions of the sanatorium is the education of the patient. He may have many years of ill-health before him, and his fate largely depends on his learning at the outset the principles on which he must in the future adjust his life to altered circumstances. Dr. H. O. Blanford, Medical Superintendent of King Edward VII. Sanatorium, Midhurst, has recently published the four lectures[3] which he gives to his patients. He shows considerable knowledge of the psychology of the consumptive, and he does not thrust his information down their throats in the crude form that is apt to provoke antagonism. Particulars about sputum and night sweats are palatable to no one, least of all to the consumptive who comes from refined surroundings. And though it is necessary that he should understand these and other disagreeably material phenomena, it is well to lead up to them gently and gradually. This is what Dr. Blanford does in his first lecture which is a philosophic discourse on life in general, as well as on life modified by the tubercle bacillus. It is amusing to find a quotation from Stevenson's "Travels with a Donkey in the Cevennes." Stevenson had a high opinion of the Trappist monks: "Into how many houses would not the note of the monastery bell, dividing the day into manageable portions, bring peace of mind and healthful activity of body." Yes, indeed! But the record of Stevenson's life is of days cut up into unmanageable proportions, and he was one of the most erratic and difficult patients Trudeau ever tried to cure. Another of Dr. Blanford's quotations is Dryden's "For they can conquer who believe they can." The "will to victory" of which so much was heard during the late war, is just as important in disease as in warfare, every patient should be able to say:—

"I am the master of my fate,
I am the captain of my soul."

The second lecture deals with graduated exercise, and as all four lectures are dedicated to Dr. Marcus Paterson, it is unnecessary to specify the views of Dr. Blanford on this subject. The third lecture contains useful hints on the early signs of pulmonary tuberculosis and the significance of fatigue, loss of appetite, pleurisy, fever, and the other warnings which the patient must learn never to ignore. The fourth lecture is on the principles of home life after treatment, and practical hints are given as to the avocations the patient would do well to follow. We warmly commend these lectures to all interested in the education of consumptives, not only because of the valuable information contained, but also because of the eupeptic form in which it is conveyed. Sometimes the sugar coating of a pill is its most important ingredient.

[2] Ibid., viii., 380.

[3] On sale at King Edward VII. Sanatorium, Midhurst. Pp. 40. 2s.

ACRIFLAVINE PESSARIES FOR CHILDREN.

To the Editor of THE LANCET.

SIR,—The difficultics encountered in the treatment of vaginitis in children have led me to use acriflavine pessaries in a strength of 1 in 500. A small size of pessary for infants measures 3 mm. in diameter with a length of 25 mm., and contains 0·5 mg. acriflavine in a theo-bromine base. A larger size for older children contains 2 mg. acriflavine and measures 7 mm. maximum diameter. Where the vaginal orifice permits, the larger pessary is used; where it is too small, as is often the case even in older children, one to four of the smaller pessaries are inserted. Little difficulty in their use is experienced by mother or nurse, and they are a valuable adjuvant to douching with silver solutions, chloramine-T, or other antiseptics. Gonococcal, colon bacillus, and diphtheroid infections clear up more quickly with this combined treatment than with douching alone. No ill-effects have been noted in a series of treated cases, ranging in age from three weeks to 12 years. Messrs. Boots Pure Drug Co., Ltd., of Nottingham, have made these pessaries for me.

I am, Sir, yours faithfully,

ALFRED G. SIMMINS, M.B. Lond., M.R.C.S.

Poultry, London, E.C., Sept. 18th, 1922.

RADIO-ACTIVE MUD.

WE have received from Chr. Hansen's Laboratory, Ltd. (77, St. Thomas's-street, London, S.E. 1), samples of the Pistany radio-active mud cubes imported by them from the radio-active wells of that name in Czecho-Slovakia. Directions are enclosed for the preparation from these cubes of a hot mud to be used in the form of a poultice or other local application. One cube of mud is sufficient to make a poultice for hand, foot, or elbow; two are required for applications to the shoulder or knee; while three to five cubes would be necessary to treat large parts of the body for sciatica or lumbago. The mud is spread in a layer 1–2 in. thick, applied directly to the body, and covered with a waterproof sheet and woollen blanket. An initial temperature of 104° F. is recommended at first, increased on successive days up to 117° or 121°. The poultice only remains in place for about half an hour at a time, but the same mud may be used for many applications. A series of 22 to 25 treatments comprise the usual month's cure. The mud is stated to be radio-active to the extent of 3200 Mache units per kilo of dried mud. We have made a trial of the preparation on a bad case of fibrositis of the elbow which was proving resistant to treatment by other means, and the result certainly was encouraging. The brick supplied required hammer and chisel to break it up in the first instance, but after the first application a smooth paste was easily produced. There is no offensive odour from the preparation, which readily peels off after use, when the part can be cleaned up at once with a warm sponge.

THE LANCET: SUBSCRIPTION RATES.

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